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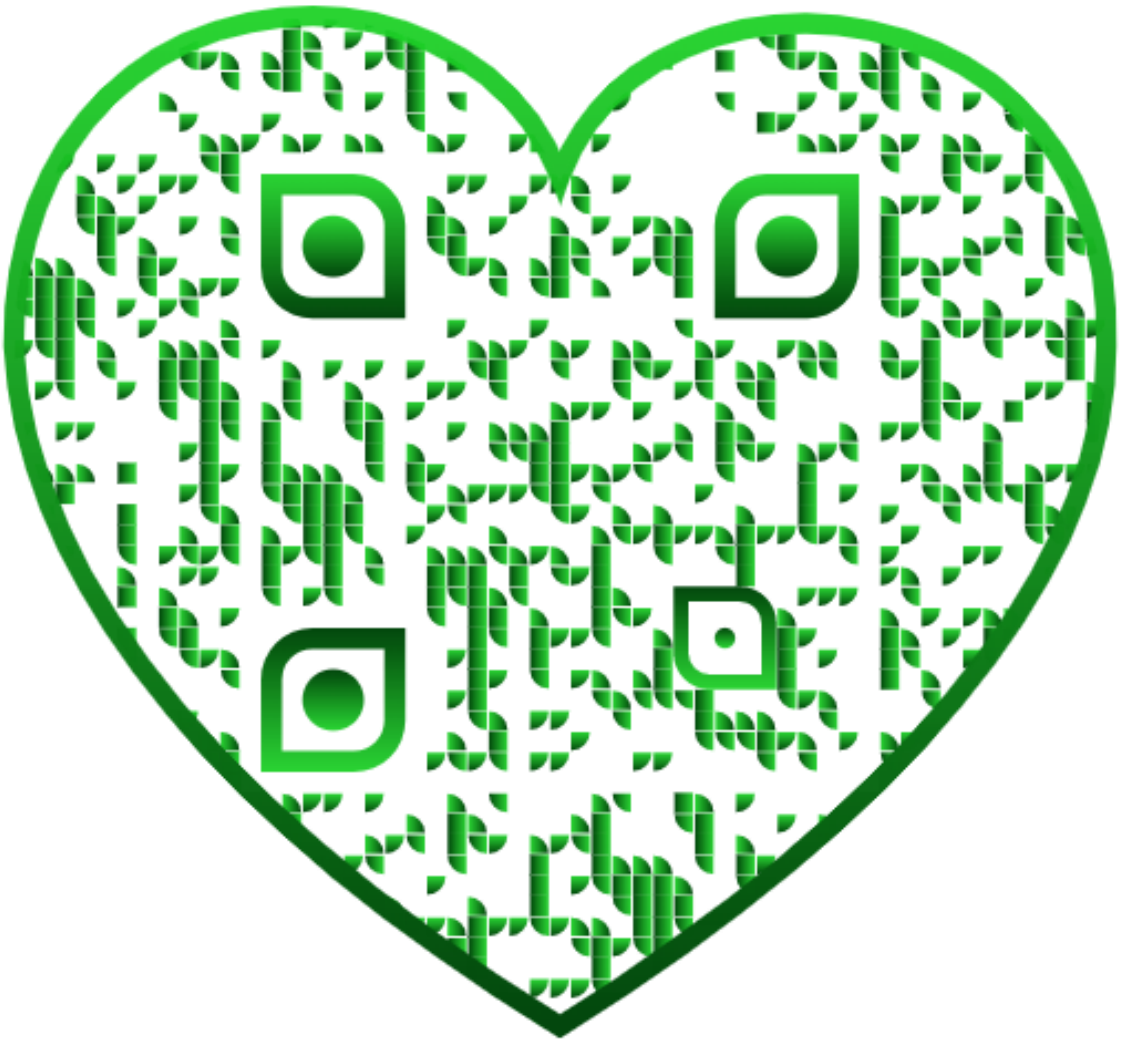

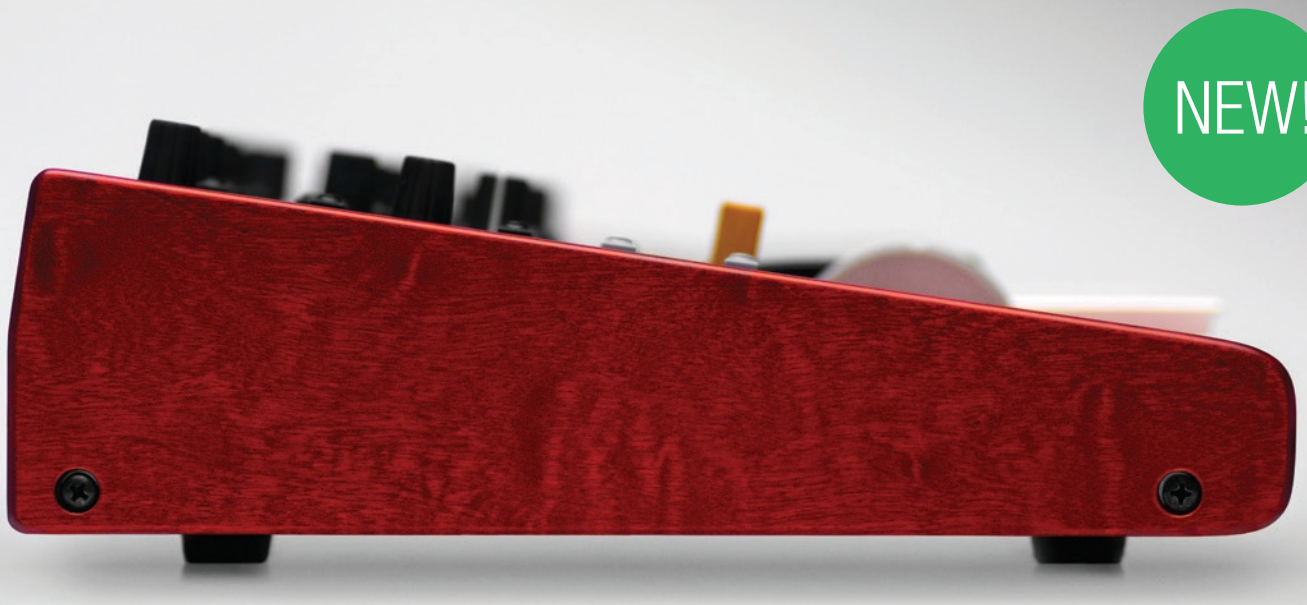

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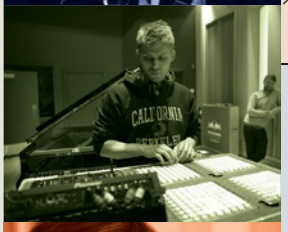

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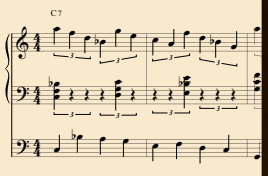
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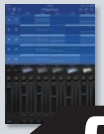

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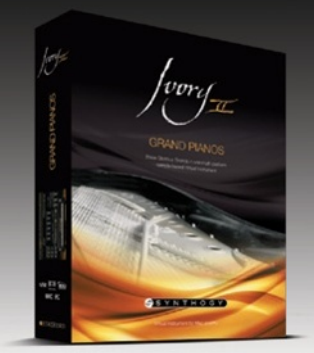

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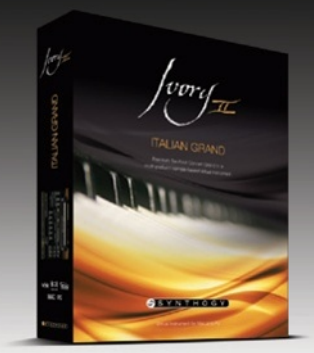

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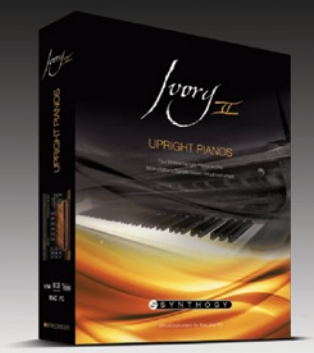

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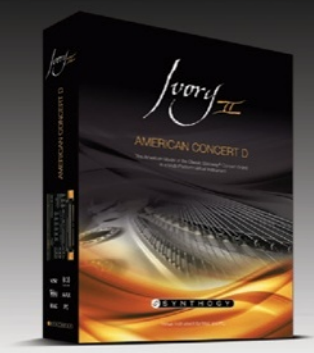

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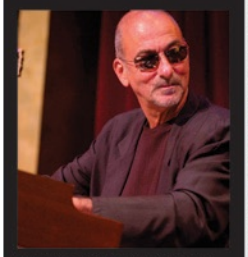

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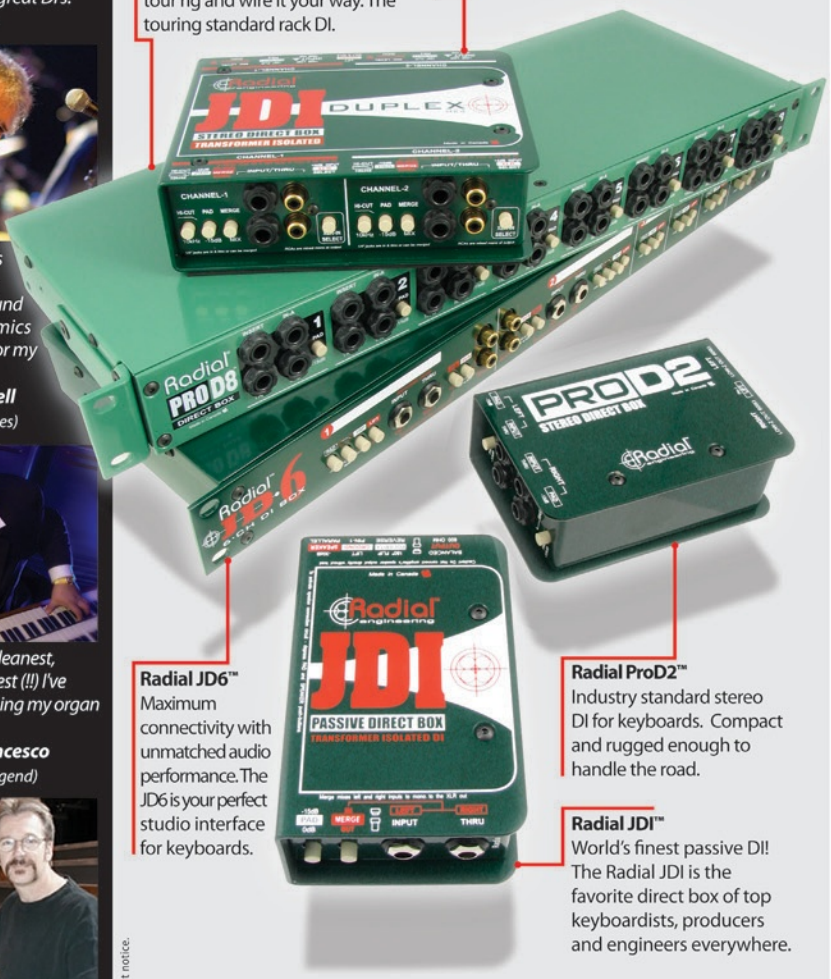

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STAGE SKILLS • STUDIO SMARTS

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Editor's Note

What is it to be "EDM" artist who performs live as a "DJ"? Even asking that question in *Keyboard*—let alone devoting as much space to it as we do in this issue—could be mistaking a hornets' nest for a piñata. It's very easy to watch any star of contemporary electronic dance music perform live and ask, "Just what are they *doing* up there?" It's true that some are doing little besides playing pre-made set lists, which in some cases are made *for* them. Any trained musician is justified in resenting these modern Milli Vanillis.

However, there's a recent wave of artists with strong musical backgrounds, aiming to combine live instrument performance and sound manipulation with the loop-based, four-on-the floor foundation that packs dance clubs. Goldfish are poster children for this trend.

Why should you care? As a keyboardist, you already have the ears and vocabulary to craft electronic dance music that you'd actually enjoy. So will the whole new audience and gig circuit you might pick up—including venues that have neither the space nor the resources to hire full live bands—in the process. If that sounds interesting, our special "Beyond DJing" tech section is for you. Now to get back to practicing my festival fist pump. . . .

Stephen Fortner

Stephen Fortner
Editor

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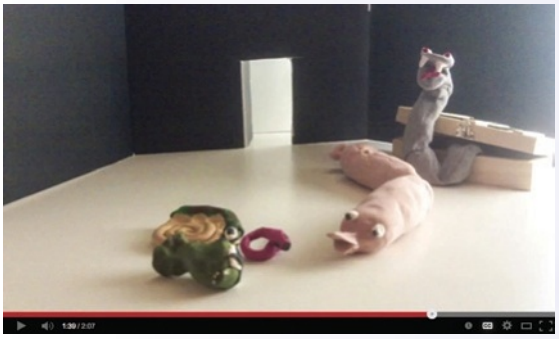
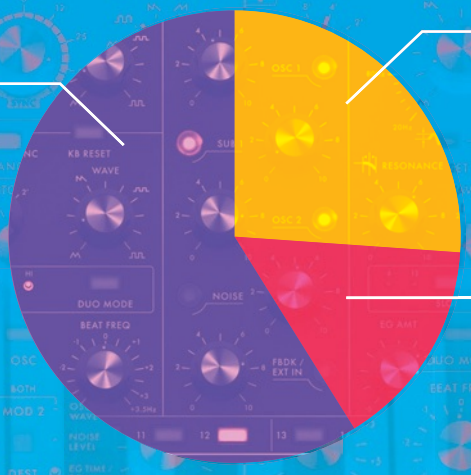


Key Secrets Freeze Frame!

Stopping time to enjoy the good parts of something is one of the best things about digital media production. While helping my son make a claymation video (youtube.com/user/Batmosphere), I realized his 300 photos would last only ten seconds at the standard 30 frames per second (fps). So we slowed the playback to 6fps—still fast enough to suggest motion—and extended important frames to last even longer. This trick works on audio, too. Try reducing the tempo of a MIDI sequence right before the chorus to build anticipation, or ensuring silence on a vocal track in between phrases to let the music speak. David Battino

THE Keyboard POLL

Q: IS THE SYNTH INDUSTRY ON THE RIGHT COURSE WITH THIS CURRENT RETRO/ANALOG CRAZE?



YES 59%
THESE SOUNDS ARE TIMELESS BECAUSE THEY WERE GOOD THE FIRST TIME.

SORT OF 26%
SOFTWARE CAN COVER EXOTIC SOUND DESIGN; HARDWARE CAN GO RETRO-COOL.

NO 15%
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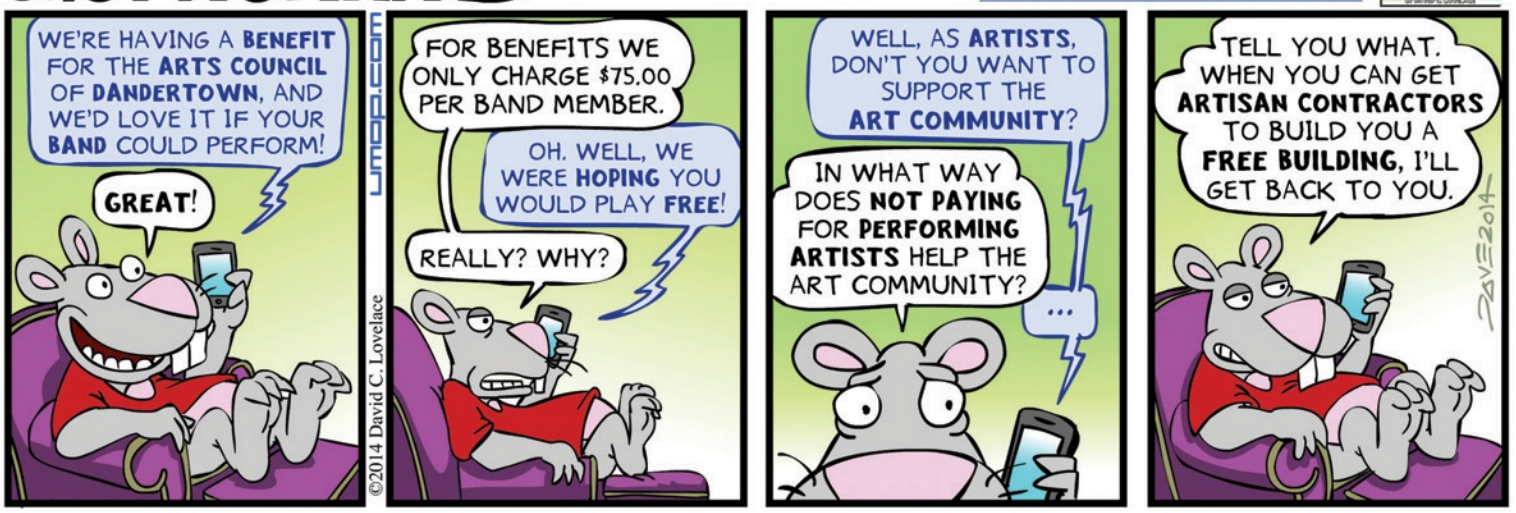
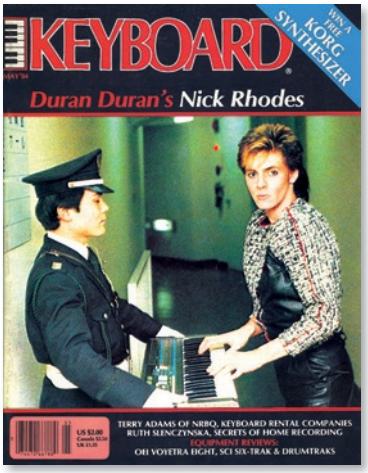




+ 30 YEARS AGO TODAY

Nick Rhodes enjoyed a personal valet for his Korg Poly-800 on our May 1984 cover, and within the pages, detailed his rig—a Roland Jupiter-8 atop a Fairlight CMI workstation—during the heyday of **Duran Duran**. [*We most recently spoke with Nick in the August 2011 issue —Ed.*] Writer Bob Doerschuk profiled the keyboard rental business, and Dominic Milano reviewed the Sequential Circuits Six-Trak and Octave-Plateau Voyetra-8—still one of the most versatile and underrated vintage analog synths around.

NEXT TECH » TEMPUR-PEDIC FOR YOUR FINGERS

The **Seaboard** from startup **Roli** grabbed a lot of attention at NAMM, and we got hands-on time both there and at private demos late last year. The concept is to meld a meaningfully "alternative" controller with a traditional layout, for keyboardists who might be put off by harmonic-table honeycomb keys or other such exotic fare. Continuously moving between the soft-yet-supple keys allows for polyphonic pitch-bend and portamento, and two ribbons run the length of the keyboard, both behind and in front of it. Its internal synth engine, Equator, is optimized to take full advantage of the control messages it sends. Find out more at weareroli.com.

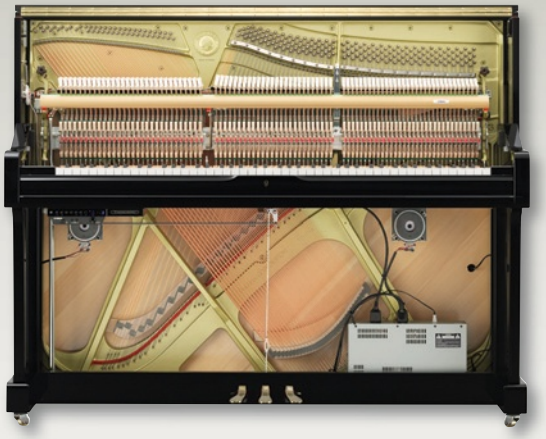
My First *Electronic Instrument*. Amin Bhatia

While synth master Amin Bhatia is widely renowned both for his nuanced television scoring on shows like *Flashpoint* and his analog prestidigitation on albums like *Interstellar Suite*, his first electronic "instrument" wasn't a keyboard at all.

"It was the family Grundig TK-341 reel-to-reel tape recorder—the Deluxe model!" says Bhatia, laughing. "I was only ten years old, but my dad saw that I had a knack for the thing, so he let me be in charge of it. The day I discovered sound-on-sound overdubbing, that started it all." Bhatia began experimenting, using the recorder to construct impromptu duets with himself. "I could create echoes and strange sounds and, using feedback, create different tones and splice them up into mini-sequences of melodies," he recalls. "Later, I added a little Stylophone synth to it and that became my first keyboard." Bhatia's family purchased a piano not long after, but he never forgot his initial electronic music inspiration. "The tape recorder was first!" he says. "Everything else came later." For more on Bhatia, visit aminbhatia.com. | Michael Gallant

NEW GEAR

BY GINO ROBAIR AND STEPHEN FORTNER



YAMAHA U1TA

WHAT Acoustic piano with transducers that make the soundboard a "speaker" for internal sampled sounds. Has Silent Piano muting and headphone out. **WHO** Pianists who want natural resonance for layering acoustic and digital sounds. [*We played this at NAMM, and it sounded fantastic. —Ed.*] **$TBD | yamaha.com**

AKAI APC KEY 25

WHAT USB-powered, 25-note keyboard with 40-button matrix and eight knobs, designed for Ableton Live. Also works as a standard MIDI controller. **WHO** Anyone who needs to combine clip launching and synth riffing while squeezing into a cramped DJ booth. **$129.99 street | akaipro.com**

RADIAL SPACE HEATER

WHAT A two-birds-one-stone combo of tube line driver and summing mixer. **WHO** Anyone working with already-tracked drums—though it could seriously warm up bass and keyboard tracks, too. **$TBD | radialeng.com**

NEKTAR IMPACT LX25 and LX61

WHAT MIDI controllers featuring direct integration with most DAWs. **WHO** Computer musicians on a budget who still want the same great feel and construction as in Nektar's Panorama keyboards. ***25 keys*: $129.99 | *61 keys*: $229.99 | nektartech.com**

IK MULTIMEDIA GROOVEMAKER 2

WHAT Performance-oriented iOS remixing app with 3,600 loops, effects, time stretching, and the ability to record and import audio. **WHO** EDM artists who want a song starter that goes wherever their iPhones do. **$9.99 at Apple App Store | ikmultimedia.com**

WALDORF STREICHFETT

WHAT Polysynth module that puts the sound of classic string machines on your tabletop. Includes mono solo synth section and effects. **WHO** Retronauts looking for string-ensemble sounds from the golden age of analog. **$325 | waldorf-music.info**

All prices are manufacturer's suggested retail (list) unless otherwise noted. Follow keyboardmag.com/news and @keyboardmag on Twitter for up-to-the-minute gear news.

AT GUITAR CENTER

MOBY

CAPTURING THE MAGIC IN THE AIR

"What initially amazed me, and still continues to, even though we oftentimes take it for granted, is that the movement of air—the compression and rarefaction of air—can somehow elicit the most profound emotional responses any human is capable of having." Moby says. "Music doesn't exist. It's just air hitting your eardrum a little bit differently than it otherwise would be hitting your eardrum. The air hits someone's eardrum a little bit differently, in a slightly more structured way, and it makes people dance, it makes people have sex, it makes people move across the country and cut their hair. It makes armies march into battle. It makes people weep. And all it is, is air. So that's magic. I just couldn't believe that something could have that much power over me. I couldn't see it, I couldn't touch it and I couldn't taste it, but somehow it was affecting me so profoundly. That's pretty much why I've dedicated my life to music."

To read the entire interview and see the gear Moby uses to make magic, visit guitarcenter.com.

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GOLDFISH

INTEGRITY IS THE NEW GLAM

ELECTRONIC DANCE MUSIC THAT'S ANY GOOD REQUIRES A MUSICAL EAR and well honed synth and production chops—though you wouldn't know it from attending many a live EDM show. Ghost-written tracks, premade playlists, and DJs jumping around onstage behind an expanse of gear they're not really using are all too common.

Dom Peters and Dave Poole are as bugged by this as the rest of us, which makes perfect sense given that the South African duo known as Goldfish started out as serious students of jazz. The video for their track "One Million Views" is a perfect parody of EDM culture—yet that very culture has embraced their expert mixology of on-the-fly Ableton grooves with live sax, flute, upright bass, and keyboard playing. Their self-described "anti-DJ" performances netted them a residency at dance club holy-of-holies Pacha in Ibiza; more recently they've been touring the world in support of their musically diverse, sonically layered, and thoroughly enjoyable album "Three Second Memory."

We spoke to Dom and Dave about the gear, techniques, and philosophy they combine to go beyond DJing.

BY STEPHEN FORTNER | PHOTOGRAPHY BY AL NICOLL

What was the first artist you heard that gave you your synthesizer "A-ha" moment?

Dom: Jamiroquai. Toby Smith was my reference for everything when I was a teenager. I used to listen to all their albums and study Toby's style. It was the perfect balance of complex jazz chords done in an accessible way, where you didn't even realize you were listening to such cool stuff because he'd reduced it to its essence. That was our gateway from jazz into electronica. After that, Kruder & Dorfmeister's *The K&D Sessions*, and St. Germain's *Tourist* were a huge inspiration—the clash of analog and digital.

What was your point of entry into experimenting with synths yourselves?

Dom: My folks bought me a Kawai keyboard for my 11th birthday. I found a grainy pic of me opening the box, and the look on my face … that definitely was the moment it all began. It had a sequencer and some truly terrible sounds, but for an 11-year-old it was like the keys to the city. Suddenly I could program tracks. I started learning tracks off the radio so I could impress girls. [*Laughs*.]

I then bought a Roland MC-505 when I was 19. At the time, Dave and I were in a jazz band and I'd take sequences to rehearsals so the band could hear my track ideas. But it never really worked out, and that's when Dave and I realized we were both into the same kinds of music. We started Goldfish alongside the jazz band and changed our lives forever.

How did your jazz study influence your approach to electronic dance music?

Dom: Dave and I both received jazz degrees from the University of Cape Town, Dave rocking a master's and myself a bachelor's. Jazz is a great foundation, almost like doing Shakespeare plays before doing film. You had to nail it then and there; you couldn't fix it in the mix. That training will always stand you in good stead, even if you don't plumb its depths after you graduate. But the biggest mistake you can make when studying is losing the essence of your musical message by letting your academic ego take over. Just because you know a bunch of clever words doesn't make you a good writer, and the same applies to music. The best thing was that the training helped us create our own samples, as we played so many instruments between the two of us that we could be the whole band.

Your album includes a remix of Us3's "Cantaloop," which itself is a remix of Herbie Hancock's "Cantaloupe Island" and a prototype of the art of sample manipulation. Was it intimidating to take on a track that legendary?

Dom: This is a funny story, actually. "Cantaloop" was the first track we ever learned in our student jazz band, and we must have played it a thousand times at gigs. Time went by and Goldfish took over our lives, but we never stopped loving that track, so we made a dance bootleg for our sets, using just a stereo WAV file of it. Fast-forward a couple of years. While we were in Ibiza, we got this email out of the blue from Geoff Wilkinson of Us3, asking if we'd do a remix for the 20th anniversary re-release. Of course, we'd *done* it and had been playing it out, so Dave casually sent it back to him two minutes later and said, "Here's the remix." I think we gave him a bit of a fright.

He mailed back straight away, saying that it was the first bootleg he'd heard that he actually liked. He subsequently sent us the multitrack separates, which let us do some really cool stuff. It was one of those weird moments where the universe aligns. If you'd told me as a teenager that we'd one day be remixing one of our favorite tunes at the request of the artist, I'd have patted you on the back and called the guys in white coats.

> "Jazz is a great foundation, almost like doing Shakespeare plays before doing film."

Which elements of your live show are sequenced, and which are played in real time?

Dom: Ableton is running the basic track, onto which we add loops, arpeggiators, and live instruments. There are only two of us, and over time we realized that there has to be a balance between reinventing the DJ wheel and being entertaining. It can't be a panicked "mission control" scenario with checklists of technical tasks. We want to focus on playing our live instruments and being creative.

What songs in your show have the biggest "octopus factor" in terms of doing a lot at once?

Dave: On "Hold Tight," I have to play the sax riff and trigger a harmony sample *of* the sax riff at the same time, which requires precise body positioning and the right neck strap length so I can play the sax with my left hand while my right hand hits the sample on the Roland SP-404SX. It keeps things interesting.

Dom: Probably "Just for Tonight." I'm playing a synth, running an arpeggiator, and sweeping the filter cutoff while also playing upright bass. It

GOLDFISH'S TOP TIPS FOR DJ-CURIOUS KEYBOARDISTS

Since Dom and Dave were jazz musicians first, we asked them what they'd tell a keyboard player who wants to go solo and start creating dance floor tracks. Here's their advice.

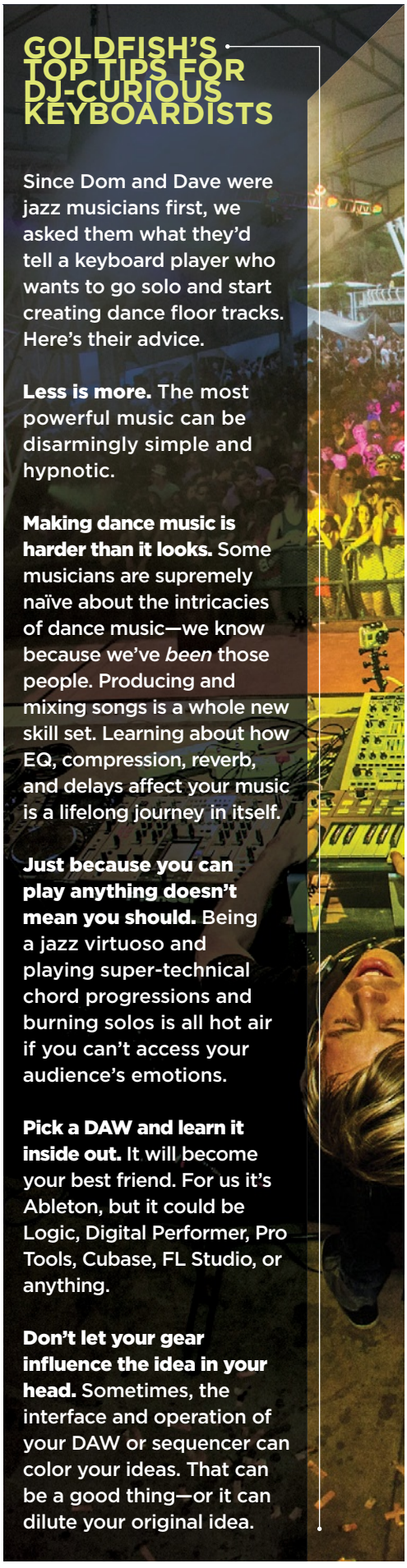
Less is more. The most powerful music can be disarmingly simple and hypnotic.

Making dance music is harder than it looks. Some musicians are supremely naïve about the intricacies of dance music—we know because we've *been* those people. Producing and mixing songs is a whole new skill set. Learning about how EQ, compression, reverb, and delays affect your music is a lifelong journey in itself.

Just because you can play anything doesn't mean you should. Being a jazz virtuoso and playing super-technical chord progressions and burning solos is all hot air if you can't access your audience's emotions.

Pick a DAW and learn it inside out. It will become your best friend. For us it's Ableton, but it could be Logic, Digital Performer, Pro Tools, Cubase, FL Studio, or anything.

Don't let your gear influence the idea in your head. Sometimes, the interface and operation of your DAW or sequencer can color your ideas. That can be a good thing—or it can dilute your original idea.



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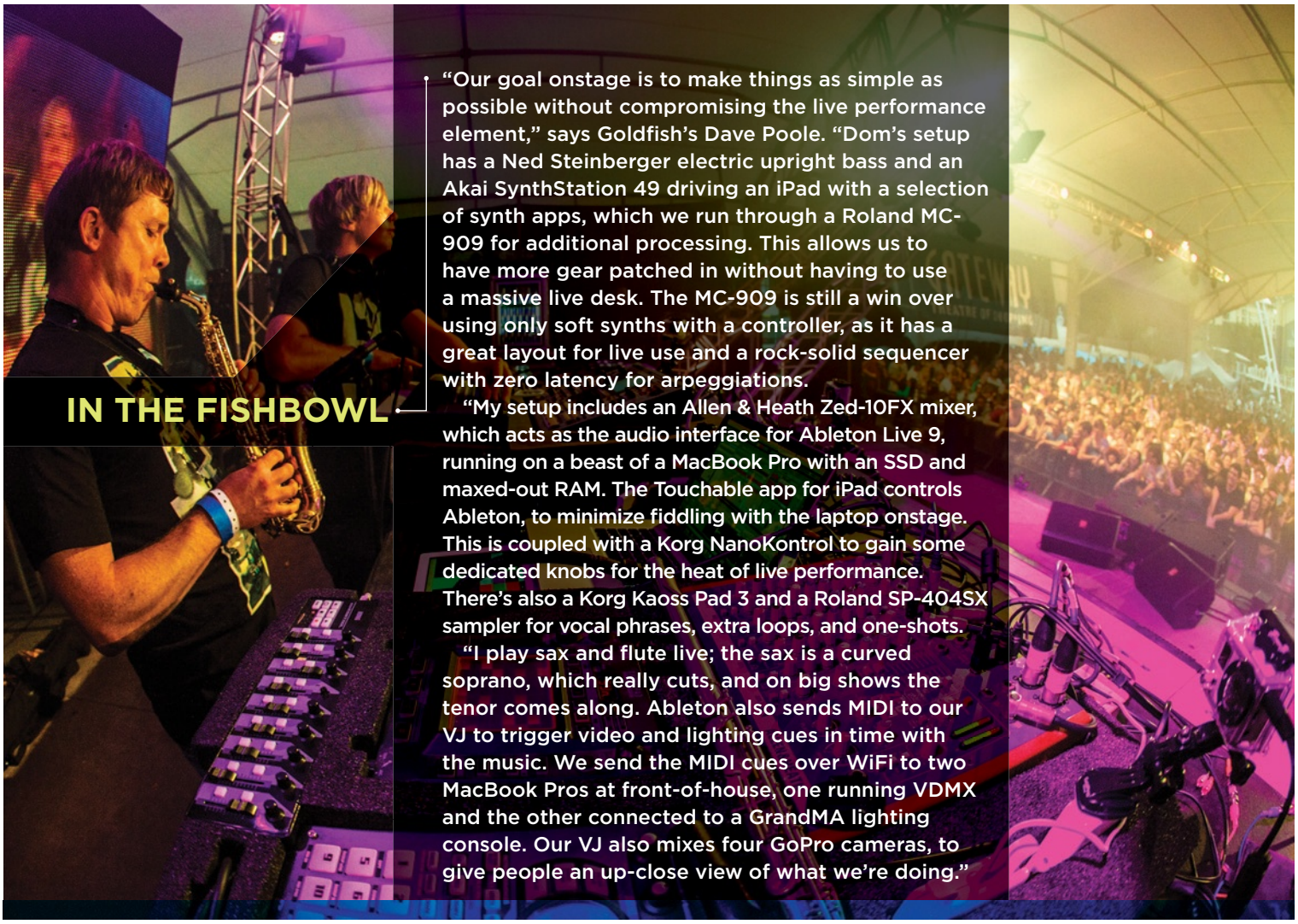

IN THE FISHBOWL

"Our goal onstage is to make things as simple as possible without compromising the live performance element," says Goldfish's Dave Poole. "Dom's setup has a Ned Steinberger electric upright bass and an Akai SynthStation 49 driving an iPad with a selection of synth apps, which we run through a Roland MC-909 for additional processing. This allows us to have more gear patched in without having to use a massive live desk. The MC-909 is still a win over using only soft synths with a controller, as it has a great layout for live use and a rock-solid sequencer with zero latency for arpeggiations.

"My setup includes an Allen & Heath Zed-10FX mixer, which acts as the audio interface for Ableton Live 9, running on a beast of a MacBook Pro with an SSD and maxed-out RAM. The Touchable app for iPad controls Ableton, to minimize fiddling with the laptop onstage. This is coupled with a Korg NanoKontrol to gain some dedicated knobs for the heat of live performance. There's also a Korg Kaoss Pad 3 and a Roland SP-404SX sampler for vocal phrases, extra loops, and one-shots.

"I play sax and flute live; the sax is a curved soprano, which really cuts, and on big shows the tenor comes along. Ableton also sends MIDI to our VJ to trigger video and lighting cues in time with the music. We send the MIDI cues over WiFi to two MacBook Pros at front-of-house, one running VDMX and the other connected to a GrandMA lighting console. Our VJ also mixes four GoPro cameras, to give people an up-close view of what we're doing."

just wouldn't be the same if that were all backing-tracked and perfect. Even if I'm the only one who knows what I'm doing, it's a lot of fun.

In the studio, what's your music production software of choice? Other gear you can't live without?

Dave: We're using Ableton in the studio—it doesn't get in the way when the creative juices are flowing. The only negative is the in-the-box bouncing, so we purchased a [Thermionic Culture] Little Bustard summing mixer to do mixdowns through. The Little Phatty by Moog is definitely a synth we couldn't live without. For controlling Ableton in the studio, we love the Akai APC40, as it makes us feel like we have a real mixing desk.

When you compose, do you start with a drum loop and slice it? Or finger-drum MPC-style? Or do 808-style step sequencing?

Dom: We don't have a set way of doing this. However, mostly it starts with a loop, which we either slice up [REX-style] or just take bits from until we have what we're after. We just tried out Roland's new Aira TR-8, which would definitely tempt us into a more 808-style approach. [*See our review of the TR-8 on page 50. —Ed.*]

Your song "One Million Views" lampoons the "just press play" mentality in EDM. Do you see yourselves as an EDM act?

Dom: We like to think of it as reinventing the DJ. We're DJs who play instruments . . . or is it musicians who DJ?

Dave: We have live elements, we have beats, we're entertainers, and we're there to make everyone have a great time. We wouldn't call ourselves an EDM act, as these days "EDM" has connotations of a more specific sound than what the letters actually stand for.

The video for that song has a scene where you go into the studio, write out sheet music, and play synths. How do songs usually begin, in fact?

Dom: It's different depending on the track. On "One Million Views," it was when I was noodling on the Wurly, which is like an inspiration machine. I came up with the opening riff and Dave just blurted out, "I got one million views." From there, we started the lyric content covering the state of dance and pop music today.

Deadmau5 once said in a *Keyboard* interview, "To produce and present electronic music is to be a DJ"—meaning that whatever your musical and technical chops are, you can't avoid being perceived as a DJ once it's time for the show. Do you agree?

Dom: Yes. That's why we featured a character based on him in the video. He wrote a blog about how "we all hit play" and that resonated with us. Yes, we all do "hit play" to varying extents, but to perform an entire pre-mixed EDM set—or take the backing-tracked, lip-synced approach that has become so prevalent in pop—is insulting to the audience. Don't get us started—we could talk all day about this! ♫

- Watch "One Million Views."
- Tour Goldfish's stage rig.

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M4SONIC

ON THE PAD CONTROLLER AS MUSICAL INSTRUMENT

BY STEPHEN FORTNER

YOU KNOW THOSE CLICK-BAIT HEADLINES ON FACEBOOK THAT END WITH "YOU WON'T BELIEVE WHAT HAPPENS NEXT"? In the case of classically trained Nick Boundy, a.k.a. M4sonic (that's "em-four-sonic"), the hype is more than deserved. "Controllerism" isn't entirely new—artists like Moldover and Jeremy Ellis have been trailblazers for some time. But M4sonic takes it to a new level, with every percussive and pitched note of his sonic creations mapped to a different pad on his Novation Launchpads. He plays songs through in real time, with no loops running, triggering something different at seemingly every sixteenth-note. These skills have gotten his YouTube videos over 30,000,000 views and netted major deals with Sony and Ultra Music. Here's how he does it.

How does your classical piano training affect your approach to creating electronic dance music?
When I compose music, I begin by playing a melody on the keys. The melody is crucial to my music and is sometimes lacking in other genres of EDM.

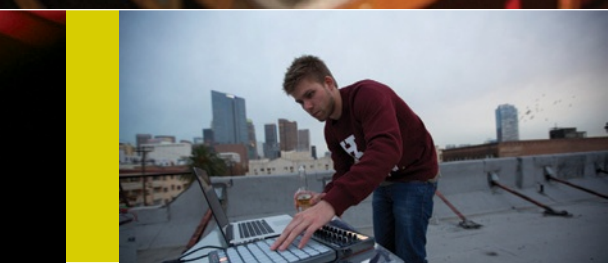
When did you start piano lessons, and who was your most influential teacher?
I first began playing at age five with my mum on the family piano, which had been left to us by a family friend who was a travelling concert pianist. I would memorize a sequence of notes that I could play while my mum played a piece of music. I then had to make up the rest, and that's my earliest memory of my first composition, which I performed at school in grade 1.

What was your point of entry from playing piano into wanting to make electronic music?
It was a combination of driving my parents mad with the constant practicing in the living room and their support for me wanting a keyboard that had more features than just a piano sound. That conveniently came with headphones so that I could play all night without disturbing anybody!

Given your keyboard training, why not just map your slices, hits, and other sonic elements to keys? What advantages does a grid controller like the Launchpad provide?
The Launchpad has no function until you map it. Therefore, unlike a piano where middle *C* will only ever be that note, I can map my own musical language. Originally that language didn't have much logic to it, only an organically built layout of sounds that my brain found easy to remember. It became such a personal space where my music was designed for me only. Over time I've adapted my loops and hits into a more methodic layout. Of the 64 LED buttons on the Launchpad, I have four quadrants of samples with very linear groupings.

Do any aspects of traditional keyboard training translate well to the Launchpad for you?
My learning style is via repetition and visual cues. I was never brilliant at sight-reading sheet music, so I quickly became accustomed to relying on muscle memory. The Launchpad is like a three-dimensional keyboard in that I can move vertically, not just horizontally. My hand positions, strangely, are very similar to playing chords on a piano. The dexterity from all those years of scales on the piano has also really helped.

What more can you tell us about your general mapping scheme on the Launchpad?
The bottom right quadrant will have the majority of the chord and synth stabs. The top right might



have pretty much anything; usually it acts as a linear extension of certain stab or chord sounds from the 16-button quadrant below. The bottom left is for percussion and FX, and above it in the top left quadrant I keep uplifters, vocals, and chord stabs that might be in an intro but not in the main body of the performance.

In that bottom left quadrant, it seems like you prefer to finger-drum grooves MPC-style rather than letting a loop just run?
Spot on. The samples are generally laid out so that my thumb plays the kick, my index finger plays the snare, my pinky plays the ride, and my fourth finger plays the crash. My left hand is always responsible for the drum kit and other sounds like vocals, risers, and so on. Working out sequences though, that's a process of trial and error. There's no genius formula, just a lot of practicing.

For your drum sounds, are you mainly using a kit-type virtual instrument in Ableton, or REX-style slices of longer audio loops?
All my drum sounds are one-shot samples. Often my bass kick is something that I've resampled from an existing project where I've layered a top kick over my main kick, tuned to the key register that my miscellaneous [pitched material] is in. The same goes for the other percussive sounds from sample packs I've collected.

What are your favorite soft synths for stabs? Bass sounds? Leads?
I'm a huge fan of plucky synths. I often use Sylenth for those sounds. My bass sounds are usually pretty basic sine waves layered with a square wave straight out of Massive, but I like to process the audio with some distortion and other effects before I have my bass samples ready for use on the pads. Leads are much the same. Depending on what VSTi I'm using, I find that resampling the single stab with another, over and over, creates some really unique sounds that I can use in other projects by again resampling, time-stretching, pitching, and layering.

Your hands are fully occupied on your Launchpads in live performance. Even so, are there any plans to incorporate, say, an analog synth?
I actually just purchased an aluminum Minimoog Voyager that I saw at NAMM, which sounds and looks amazing. Expect not just a new sound in my production, but a new element of performance with this synth in the future!

DJing has one important cultural aspect in common with jazz: The idea of covering, quoting, and interpreting someone else's "standard." Do you think that your method of dissecting the rhythmic and pitched content into all these pad-mapped elements might encourage "live remixing" between artists?
One hundred percent. Just recently I teamed with Novation to give away my samples via a YouTube competition where people perform on the Launchpad iPad app. It's been really exciting to see how users who've downloaded the sample pack are moving samples around and laying things out in their own ways to make new remixes of my performance of "Virus."

It's also becoming increasingly common for artists to share the stems from their tracks for remix competitions, and a growing number of controllerists out there are starting to experiment with this. Instead of putting a track together on a computer using a DAW, then transferring it and playing it live on CDJ decks, I hope more producers start to use the controllers and instruments that they *made* the music with to perform it live. What makes the Launchpad such a great tool is its versatility for studio and live performance.

Are there any non-EDM musical influences in your background, other than the aforementioned classical training, that might surprise your fans?
Yeah, I would listen to Korn. I was a huge fan of their drummer Joey Jordison. I always wanted to play drums. I mucked around on friends kits but never had lessons. On the complete opposite scale I was listening to Vangelis and orchestral compositions. I appreciate music for what it is, not the stereotype that accompanies it. I don't ever want to feel restricted to making music that's only "EDM."

Where do you think EDM is headed overall, and what can be done to promote more real musicianship—and appreciation of that by fans?
The biggest part of this is educating audiences about how EDM is produced and performed. There is a growing dissatisfaction with the "press play" mentality and acts like Disclosure and Robert DeLong are growing large fan bases as a result of not only their music but their live performance. Similarly, big-name superstars like Skrillex, Zedd, and Above & Beyond are doing live instrumentals as a way of showing their fans that they're also musicians. Commonly EDM fans think of a producer and a DJ as the same thing. These two roles have been meshed together and often a great electronic producer is not an amazing DJ. Similarly there are some technically amazing DJs who can't really make music. I think that helping the community understand that these are two unique skill sets will make them really appreciate the artists who both produce their music *and* perform it in a unique way. ♫

Watch M4sonic's incredible chops on the Novation Launchpad.

keyboardmag.com/may2014

Big Gigantic

BY LILY MOAYERI

BIG GIGANTIC SAXOPHONIST AND PRODUCER DOMINIC LALLI RECEIVED A master's degree in jazz from the Manhattan School of Music. Beginning in Boulder, Colorado, in 2008, Big Gigantic is now on their fifth album, *The Night Is Young*. Once again, they mine genres for an amalgamation of EDM, hip-hop, and electrified soul. Lalli and Salken offer their albums for free download, and their last full-length, 2012's *Nocturnal*, has had over a million downloads. Festival regulars, Big Gigantic's live show is one of the duo's driving forces. Switching between drums, sax, and keyboards, the two do the work of a full band onstage.

What were your influences when you started the band?
They are a lot of the same influences I've always had, which range from classical and jazz music to electronic music to club music.

Which particular keyboards figure largely into the creation of your sound?
Mostly piano, Rhodes and organ sounds, some soft synth sounds, and also some Moog type leads.

How did the transition from saxophone to keyboards happen?
I've always played sax, but playing keyboards is, to my mind, a crucial part of being a musician no matter what primary instrument you play.

Are you "livetronica"?
Some people use that term to describe our sound. In some ways it's accurate and in some ways, for what we're doing, it's too general.

The song "Blue Dream" takes a very aggressive, synth-driven, trap groove and layers an almost jazzer's sax melody on top. . . .
I've always combined more synthesized and electronic elements with more organic sounds like my saxophone or a horn section or a piano. Essentially it's just something we've always strived for.

What synth was used for the rapid-fire, throaty, sixteenth-note synth part throughout "Let's Go?"
It's called [LennarDigital] Sylenth1, which is a pretty popular synth in the electronic music world.

Going back a little further in your catalog, what synths were used for the wormy sawtooth lead and square-wave arpeggio on "Rise and Shine"?
I used Native Instruments Massive for that lead synth and Sylenth for the arpeggio.

A lot of your music is characterized by that sort of machine-gun synth part. Instead of a fast four-on-the-floor under that, the kick and snare hit at half-time. Is the contrast intentional?
I've always been a fan of rap and hip-hop, so I think that's where my influence stems from in terms of that tempo.

What are the biggest things, musically, that a traditional keyboardist or songwriter needs to understand if they want to branch out and create music for an EDM audience?
You're making music for people to dance to. If you keep that in mind and put *your* music in that situation, it's easier to know what your goal is in terms of the track. Kids love the buildup and the drop and there are a million different ways to approach it, so the creativity lies only within boundaries that you set for yourself. ♫

Olivia Trummer

BY JON REGEN

KEYBOARDIST AND VOCALIST OLIVIA TRUMMER HAS BEEN MAKING HER MUSICAL mark both in her native Germany and around the globe, with a seductive stew of jazz, funk, blues, and beyond. Find out more at oliviatrummer.de.

HOMETOWN: Berlin, Germany.

INSTRUMENTS PLAYED: I play piano, Rhodes, flute, violin, saxophone, some percussion, and I sing as well.

MUSICAL TRAINING: I started playing piano at age four. I was classically trained and I always loved to improvise and compose. I started writing songs and singing along while I practiced piano at an early age. I also actively participated in several choirs. I have a degree in both jazz and classical piano and studied for one year in the jazz piano master's degree program at the Manhattan School of Music in New York. I also took private lessons with Richie Beirach and Sophia Rosoff.

FIRST GIGS: My first gigs were classical, around age six. I performed recitals with my mother's piano class.

MUSICAL INFLUENCES: For classical music, it's everything from Bach to Bernstein. For Jazz, I love Bill Evans, Shirley Horn, Gonzalo Rubalcaba, and Kurt Rosenwinkel. And for pop music, I love artists like Michael Jackson, Stevie Wonder, Laura Nyro, Prince, and Aphex Twin.

WHAT I'M LISTENING TO RIGHT NOW: Art Tatum, Prince, Laura Nyro, and Led Zeppelin.

MY BIG BREAK: I would say a significant moment was when I brought tears to my father's eyes by playing my original songs. Playing with Bobby McFerrin was a wonderful experience as well.

LATEST ALBUM: I'm working on my fifth studio album, entitled *Fly Now*, which will be released later in 2014.

FAVORITE KEYBOARD GEAR: Steinway grand pianos, the Wurlitzer electric piano, and the Nord Lead synthesizers.

WHAT'S NEXT: The release of my new album, as well as working on new songs at home and in the studio in Berlin. I'm touring (especially in Europe), and observing life, always in the sweet danger of facing a new songwriting-avalanche.

ADVICE: "You've climbed a mountain top, you're ready to fly now." ♫

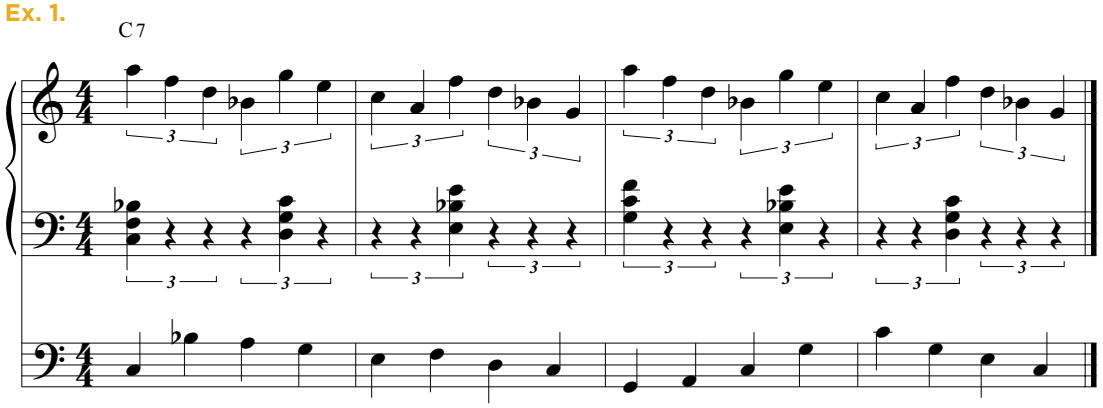
Time Trickery

ODD SIGNATURES, METRIC MODULATION, AND GROOVE DISPLACEMENT

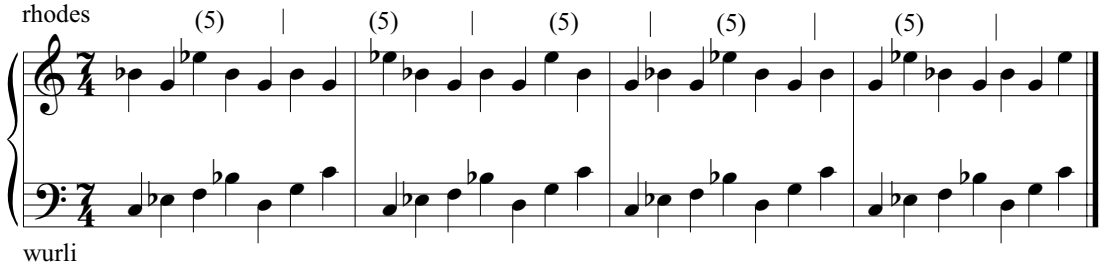
BY BRIAN CHARETTE

ODD TIME SIGNATURES **ARE GENERALLY DEFINED AS ONES WHERE THE NUMBER OF** beats per bar is not evenly divisible (*e.g.*, 5/4, 7/8, 9/4, 11/4). *Metric modulation* happens when you *imply* an odd time signature (via accents or triplets) over a standard one such as 4/4. This concept has been used in African music and even by Bach, but it became popular in jazz through the influence of Miles Davis' drummer Tony Williams. *Groove displacement* means moving an existing groove forward or backward a fraction of a beat. Let's examine these three concepts.

Ex. 1.



Ex. 2.



1. Metric Modulation

In **Ex. 1** we group quarter-note triplets into descending arpeggios of four notes per phrase. If we treat these groupings as new "measures," we can fit three of these new modulated bars over the 4/4 time signature. The left-hand chords mark the beginning of each new modulated "bar," while the bass line plugs along in the original time so you can keep track of where you are. This is the basic concept for most metric modulations. You can also group different note values (like dotted quarter-notes or eighth-note triplets) in this way.

2. 7/4 on Electric Pianos

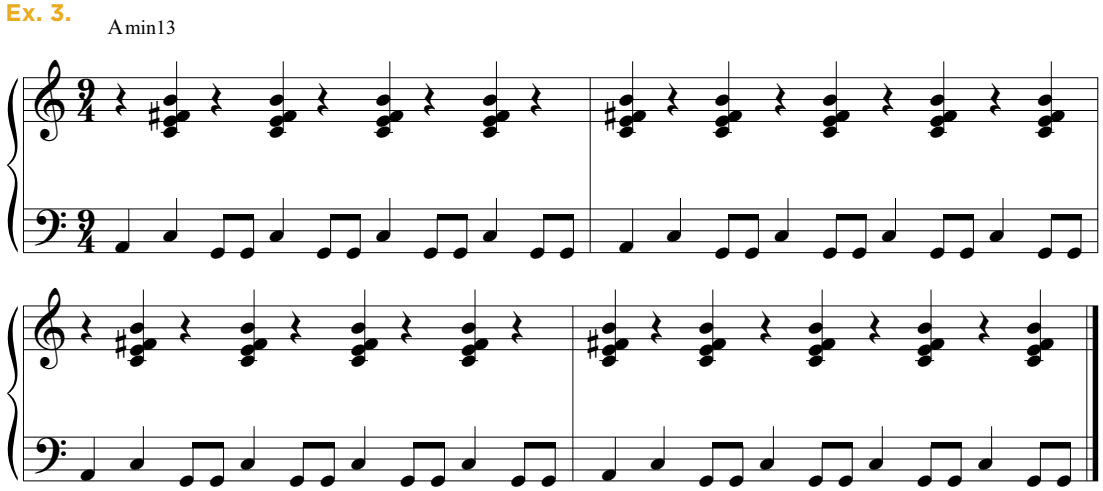
Ex. 2 is a grouping exercise in 7/4 time. The left hand sets up a *C* minor ostinato while the right hand plays groups of five quarter-notes. Notice how the two groupings oppose one another. In the online audio clip, we have a Rhodes with a little delay on top and a Wurly on the bottom. If you're having a hard time conceptualizing when the beginning of the pattern (pitch-wise) lines up with beat 1 of a measure, draw out the music so you can see where the different groupings come out together.

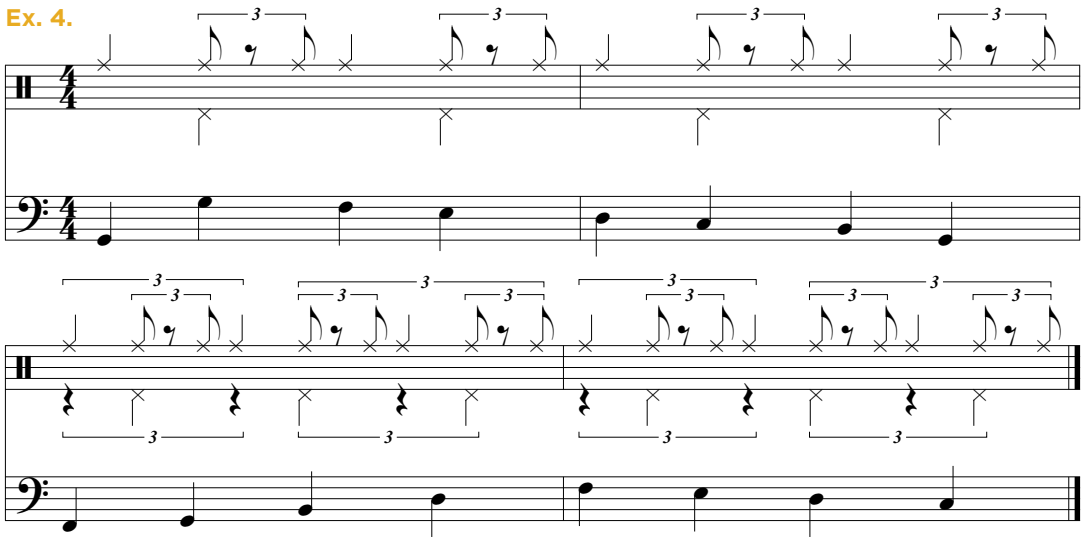
Listening List

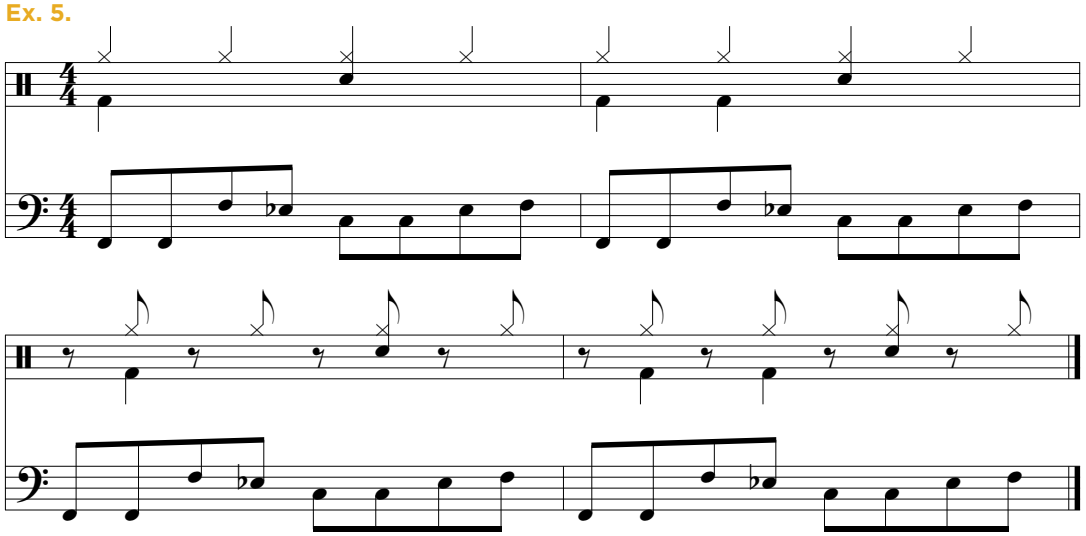
MILES DAVIS
Four and More

WYNTON MARSALIS
Marsalis Standard Time Volume 1

TOWER OF POWER
Back to Oakland

Ex. 3.

Ex. 4.



Ex. 5.

3. 9/4 on Organ

Ex. 3 takes an organ approach for time trickery. This one is in 9/4 and has an off-beat comping pattern in the right hand that goes to an on-beat pattern every other bar. For the bass part, pull the first and third drawbar on your Hammond or clonewheel all the way out. Add vibrato and Leslie however you like and avoid harmonic percussion.

4. Swing Time Tricks

The drummer is usually the band member who initiates these ideas, so it's important to examine these concepts through a drummer's eyes and ears. In the first two bars of **Ex. 4**, we have an ordinary swing beat with a quarter-note bass line. In bars 3 and 4, the drummer makes the quarter-note triplet the new pulse. The ride pattern from beat 2 in the original time moves to the second quarter-note triplet in the modulation. You can practice this away from the keyboard. Over any 4/4 pop music, tap quarter-note triplets on your lap with your right hand, mimicking a ride cymbal. With your left, accent every other triplet in the way the high hat would close on "two and four" in a traditional jazz beat. Slowly slip in the "dinga ding" on every second triplet with your right hand to complete the ride pattern.

5. Funky Groove Displacement

Ex. 5 is a funk application of groove displacement. A simple funk beat in bars 1 and 2 shifts an eighth-note ahead in bars 3 and 4. The funk bass line stays steady so we again know where we are relative to 4/4. This is another concept that you can practice away from the keyboard. I like to use my right hand for the hi-hat, left hand for the snare drum, and right foot on the ground for a bass drum. You can even sequence the bass line in this example for practice. Tower of Power drummer David Garibaldi is a master of this style. For a great example of groove displacement, listen to the bridge of the their tune "Squib Cakes" from the album *Back to Oakland*.

Reading Time

"For further analysis of these concepts I highly recommend drummer Ari Hoenig's book *Intro to Polyrhythms*," says **Brian Charette**, who has performed and recorded with Joni Mitchell, Michael Bublé, and Rufus Wainwright, in addition to leading his own jazz groups. His two new albums are *The Question That Drives Us* and *Square One*. Find out more at kungfugue.com.

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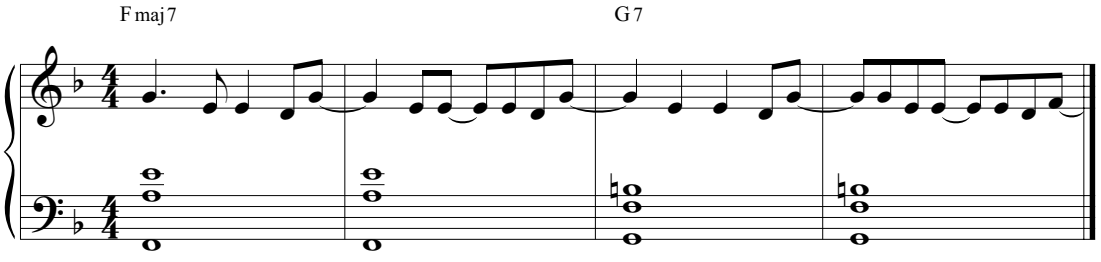
A Reharm Primer

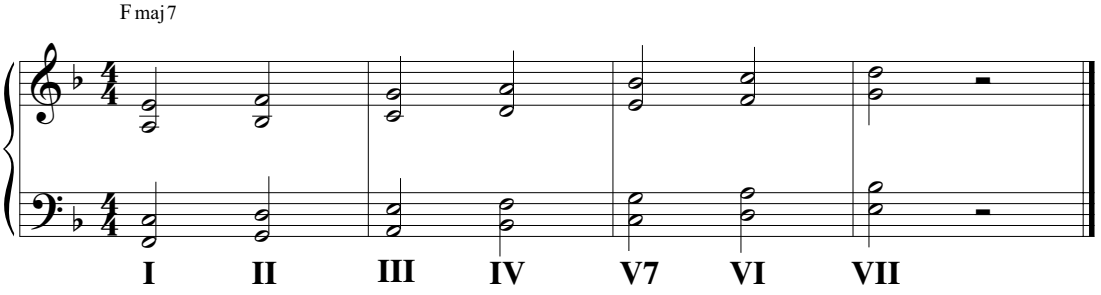
BY JASON REBELLO

DO YOU EVER GET BORED OF THE SAME OLD chord voicings? Are you looking for interesting ways to accompany a singer or other lead instrument? *Reharmonization* is the key, but rather than give you loads of historical examples, I want to show you some simple principles that will hopefully set you on your way towards creating your own. The idea at work here is that chords come from *scales*. So rather than thinking about particular chords, we can find the underlying scale and use that to give us alternate chords.

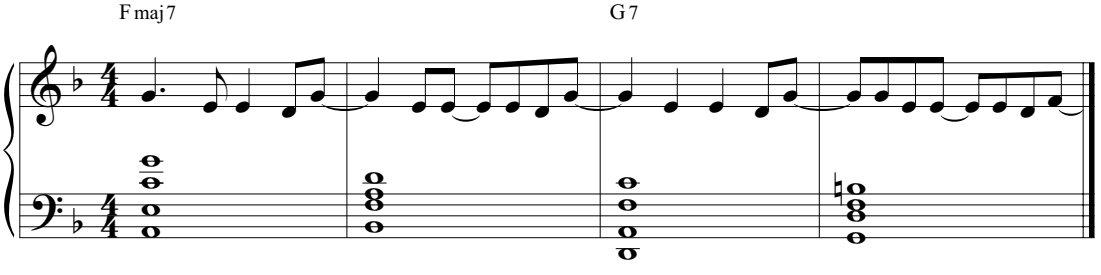
Ex. 1.



Ex. 2.



Ex. 3.



1. Standard Changes

Let's look at how to vary the first two chord changes of a song. **Ex. 1** illustrates the melody and chords from a bossa nova in the style of Antonio Carlos Jobim's classic tune "The Girl from Ipanema."

2. Mother Scales

If we want to look at the other options for chords for our song, we can look at the underlying *scale* of the chord for other possible choices. For instance, our first chord is *Fmaj7*, which comes from the *F* major scale. Remember that all chords can be traced back to a "mother" scale. **Ex. 2** is a simple harmonization of the *F* major scale using the root, fifth, third, and seventh.

3. Chord Scale Substitutions

Now we can look at the *Fmaj7* chord from our song and substitute it with one or more of the chords from our *F* major scale. The same applies for the *G7* chord, *i.e.*, chord *V* of the *C* major scale. In **Ex. 3**, the first chord is chord *III* from *F* major and the second chord is chord *IV* from *F* major. The third chord is chord *II* from *C* major and the fourth chord is the same as the original (chord *V* from *C* major).

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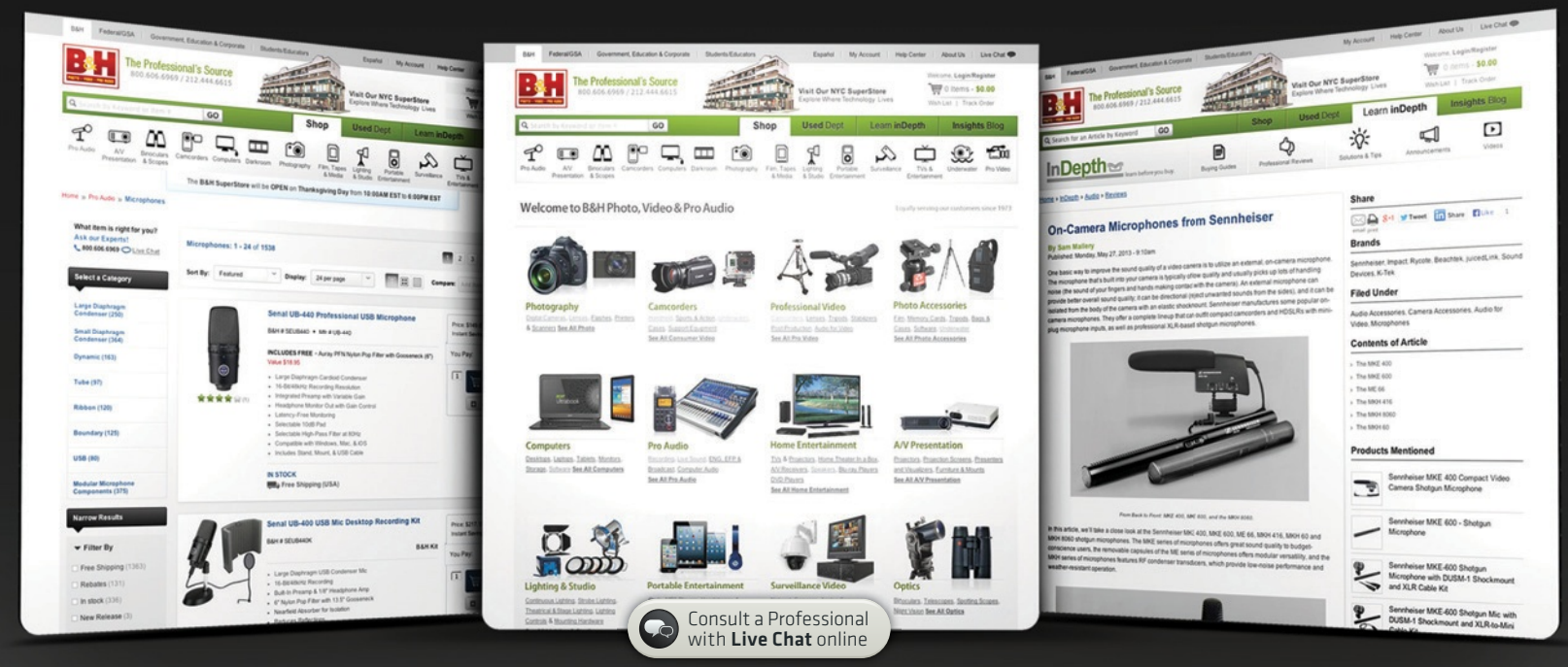

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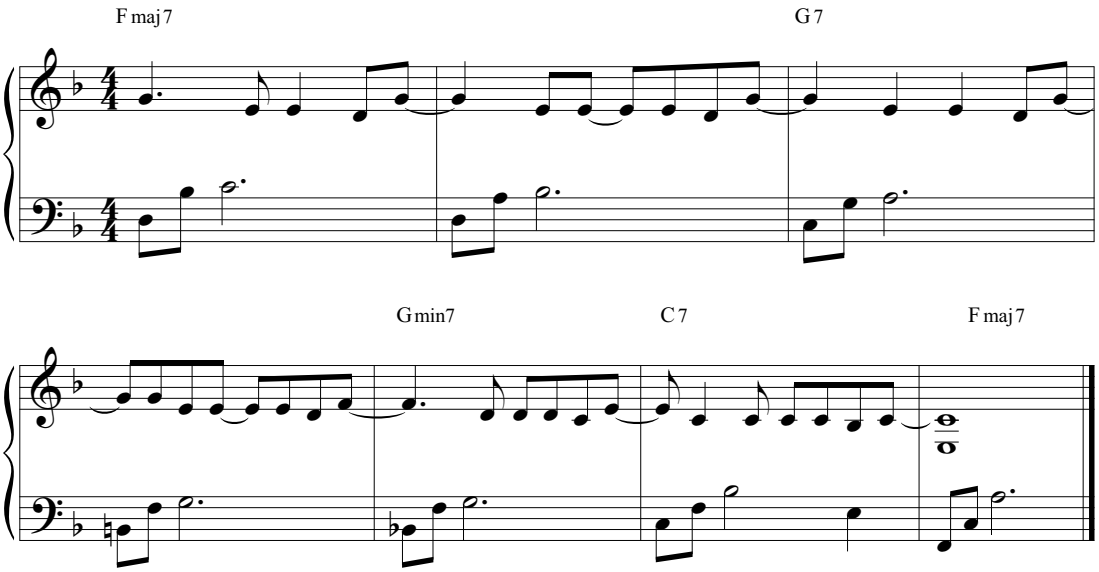
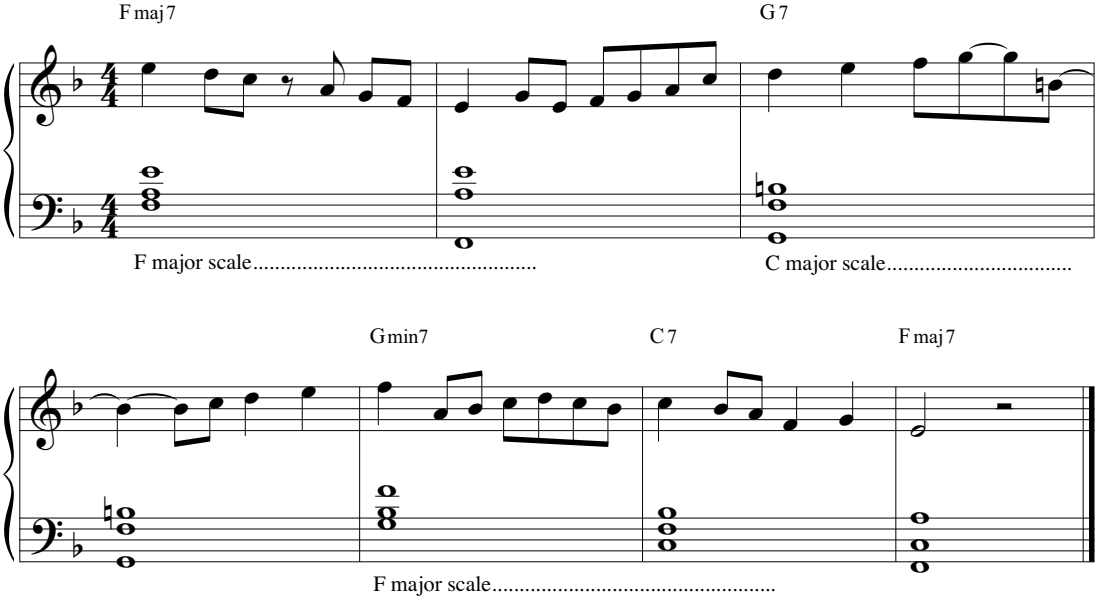
Ex. 4.

Ex. 5.

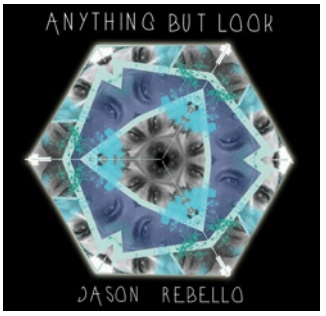


4. Alternate Substitutions

Ex. 4 takes this idea one step further and changes the character of the tune. Here, the first four bars are from the *F* major scale, the next two are from the *C* major scale, and the next three are from the *F* major scale again. This application gives the piece a sadder sort of feel. Notice how by using only basic major scales, we've managed to create something quite different from our original set of chord changes. We haven't even looked at minor, altered, or diminished scales yet, but if the same principles are applied we can add many more colors to our reharmonizations.

5. Mother Scale Solos

Ex. 5 is a simple solo constructed using "mother" scales. These same substitution principles apply to improvisation, too. Try experimenting with reharmonization in your playing and soloing. Remember that *discovery* is the real joy of jazz.



"One of my biggest influences is Herbie Hancock," says **Jason Rebello**. "He's a master of reharmonization." Rebello has worked with Wayne Shorter, Sting, Jeff Beck and Peter Gabriel. His new album *Anything But Look* is out now. Find out more at jasonrebello.co.uk.

Listening List: Herbie's Reharms

"Round Midnight"
The Other Side of Round Midnight

"Embraceable You"
Gershwin's World

"Mercy Street"
The New Standard

"Both Sides Now"
River: The Joni Letters

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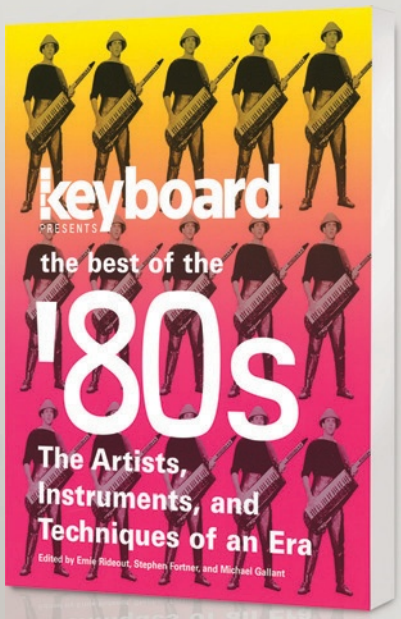

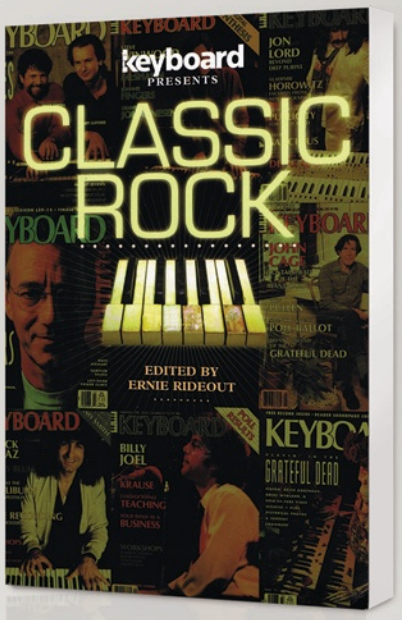

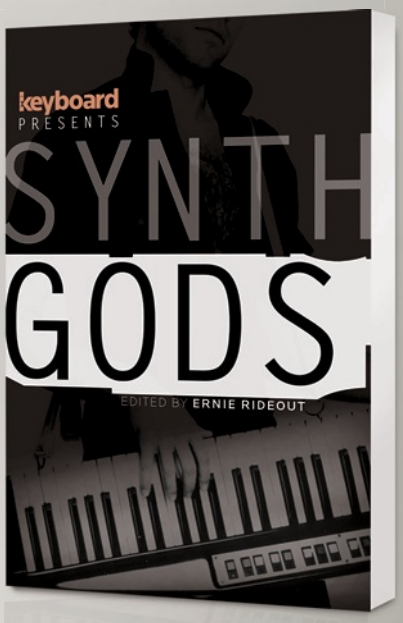

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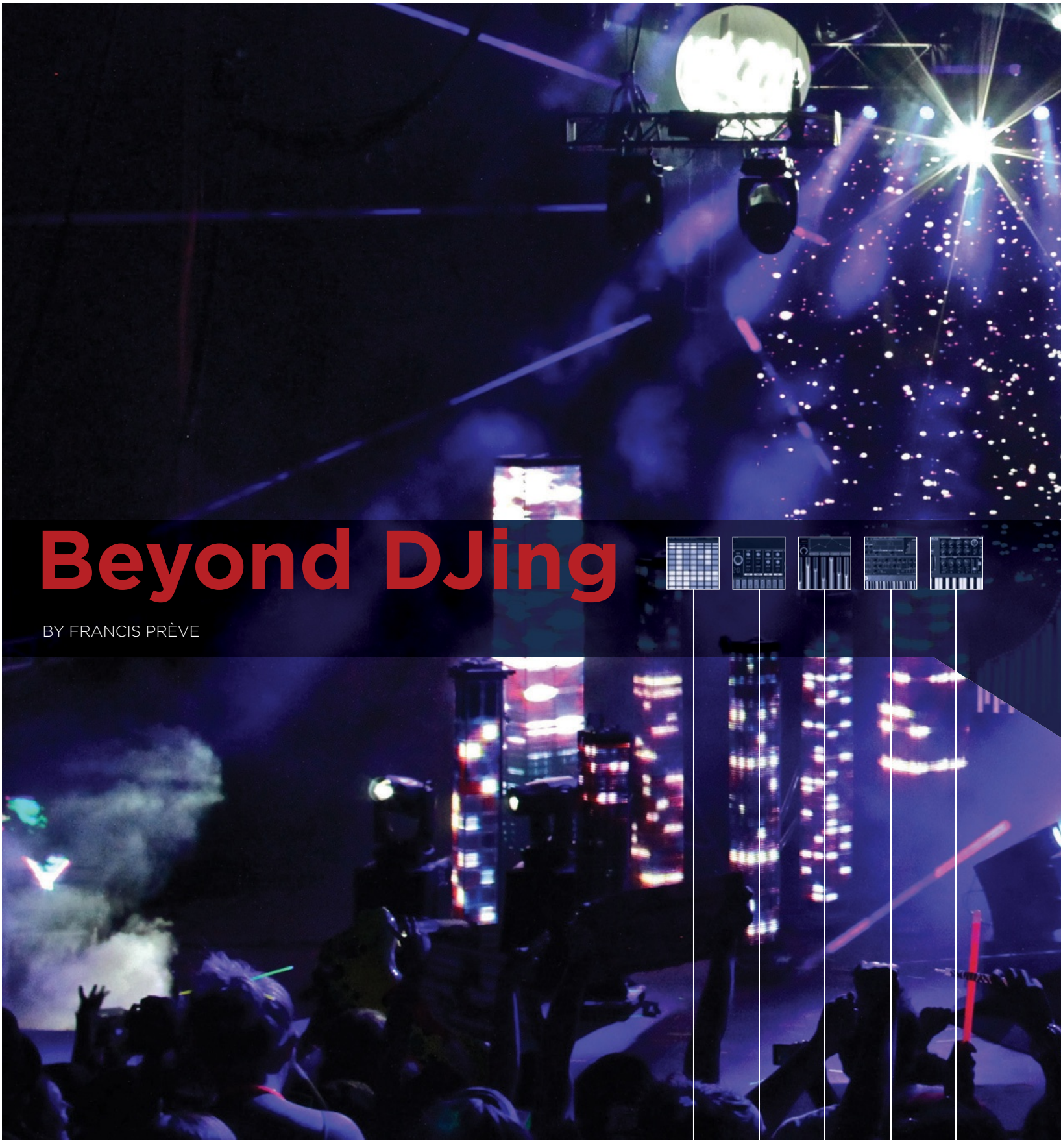

Beyond DJing

BY FRANCIS PRÈVE

WHEN DEADMAU5 PUBLISHED HIS 2012 BLOG ENTRY CALLED "WE ALL HIT PLAY," he unleashed a firestorm of controversy in the electronic dance music world. His overall assertion was that regardless of the musicianship and production skills required to create great EDM tracks in the studio, performing those tracks at shows is little more than playback, and thus requires very little talent. Veteran DJs cried foul. Insiders snickered. But keyboardists understood. Why? Because many of us have been using sequencers live since the early '80s—and some trailblazers of electronic music used them well before that. Plus, we already know how to listen for keys and tempos, and have an inherent sense of what makes a beat, bass groove, or synth riff danceable, funky, and engaging.

DJing can be a lucrative and fun gig for keyboardists, whether you're doing creative things with other artists' tracks, performing your own, or as most big electronic DJs do these days, both. In this special section, we'll examine how to make your sets maximally musical—all with your inner muso respecting you in the morning!

FIVE WAYS TO ADD LIVE PERFORMANCE TO A DJ SET

THERE ARE BENEFITS TO THE "TRADITIONAL DJ" APPROACH, IN THE CLASSIC, improvisational sense of mixing two tracks that are unexpectedly wonderful together. However, as our industry migrates to laptops and controllers, even purists are starting to wonder, "Hmm, what *else* can I do onstage?"

That's where keyboardists have the distinct edge. While most of us may not have the encyclopedic knowledge of the history of dance music and a collection of thousands of obscure and crowd-pleasing tracks, we *are* often the musicians who are creating the remixes and tracks themselves. That's one of the biggest reasons that all of the newest DJs on the scene are also producers in their own right. Twenty years ago, if you wanted to be taken seriously as an EDM producer, you had to build credibility by spinning other artists' tracks for crowds. Now, if you want to hit it big as a DJ, you'd better be great at crafting your own tracks.

So why not take the production skills and musicianship most keyboardists already have and fuse them with the art of DJing? That's exactly what's been happening in the ever-evolving world of EDM. Trailblazers like Sasha and Richie Hawtin have been using complex controllers to perform their music for close to a decade, while newer stars like Deadmau5, Moguai, Joachim Garraud, and those featured in this issue incorporate even more elaborate approaches to melding production and live performance into a DJ context.

Here are five techniques that will help keyboardists enter the fray, bringing their years of musical experience to the true art form of DJ sets and taking everything up another notch.

1. PAD CONTROLLERS

Add a flashy controller to your rig, preferably one with *lots* of LEDs. This is the closest cousin to standard DJ style, but if you approach it from the perspective of a musician, you can really add a lot of spice to your sets without raising the "accident factor." Take Austin-based boutique manufacturer Livid's Base controller, for example. It has eight touch faders, eight touch "knobs," and 32 pressure-sensitive pads. Since all of these controls feature customizable RGB LEDs, it looks like Christmas on Coruscant—making for an extremely visual performance.

More familiar controllers on the mass market (and thus more likely to be available for trying out in a music store) include Novation's compact and affordable Launchpad S (reviewed Feb. '14) and for those who want an extension of Ableton Live that becomes a musical instrument in its own right, Ableton's own Push controller (reviewed Jan. '14). Many DJs might consider Push too large and heavy for carrying in a backpack to a cramped DJ both, but schlep-accustomed keyboardists likely won't blink.

The secret with any controller such as these is *not* to simply approach it as a bunch of volume sliders and drum pads. With a controller this flexible, you can assign two groups of three or four faders each to a single channel and its effects. For example, in my rig, I have my first four faders assigned to highpass filter, lowpass filter, echo, and volume. In this manner, I can create absolutely seamless blends between tracks or loops and add a touch of my own production flair to each segue. But that's just how I do it. Another producer could use those same faders for bit-crushing, buffer/stutter tools, even macros that sweep the parameters of several effects at once. The trick is to avoid the pitfall of thinking strictly in terms of volume or EQ and giving each fader your own unique touch as an artist.

Then there are the pads. As keyboardists, we're fairly well conditioned to think of these as drum triggers, because until a few years ago, that's all they ever were. Nowadays, every pad can be anything from a toggle button to a MIDI note to an effect switch, in addition to standard drum pad fare. What's more, certain controllers with pressure sensitive pads can be used to dynamically raise/lower the value of a continuous controller or effect level, kind of like aftertouch.

Top Pad Controllers

- Livid Base
- Keith McMillen QuNeo
- M-Audio Trigger Finger Pro
- Novation Launchpad S
- Akai APC Mini
- Ableton Push

2. GROOVEBOXES AND DRUM MACHINES

Another time-honored way to get interactive with your performances is to add a groovebox or drum machine and sync it to your software. Granted, this will work most effectively with software such as Native Instruments Traktor and Ableton Live, as opposed to old-school DJ apps like Serato Scratch. For adding impact to a performance, this is a very cool option for two reasons. First off, hardware is more playable and features lots of real-time controls out of the box. Secondly, thanks to products like Korg's Volca series (reviewed Mar. '14) and Akai's new Rhythm Wolf, you can add real analog substance to a digital set.

If you decide to add a groovebox to your rig, there are a few things to keep in mind. The most important is how to sync the groovebox to your DJ software. In the case of a product like Roland's new Aira TR-8 (see page 50), just set a few preferences, plug in a USB cable, and you're good to go—and it's also your computer audio interface. Elektron's new Analog Rytm offers USB MIDI sync, as does Dave Smith and Roger Linn's near-legendary Tempest. With Korg's Volca series you can choose between analog sync or a five-pin MIDI connection. And of course, there are hundreds of old MIDI drum machines out there, both new and used. You just need to add a USB-to-MIDI interface to your gig bag (and at this point, maybe a portable hub, too).

Once you've got the groovebox synced, it's just a matter of plugging it into one of your DJ mixer channels and bringing it in at key moments in a gig. What's a key moment? Well, imagine starting a show by building a groove on a drum machine in real time from scratch, then switching over to your laptop and bringing in a slamming opening track, rhythmically synced. We're talking real drama here. If you really want to go whole-hog with your groovebox, Dave Smith and Roger Linn's award-winning Tempest (which does come at a premium price) is an absolute monster for this type of performance.

Top Groovebox Picks

- Roland AIRA
- Dave Smith Instruments Tempest
- Korg Volca Beats
- Elektron Analog RYTM
- Akai Rhythm Wolf

3. ADD AN IPAD

The ubiquitous iPad is another easy and powerful way to add impact to a DJ set. Deadmau5 and Moguai have used them live as touchscreen controllers for external gear, thanks to apps like Lemur (above left) and TouchOSC, which allow the above-mentioned controllerist approach (albeit without the pleasure of truly tactile response). So that's one way to quickly integrate an iPad into your live performances.

However, with the vast array of iOS synths and grooveboxes, as well as exotic sync options like Korg's WIST protocol for the ultra-ambitious, there are almost as many musical options for iOS users as there are for standard Macs and PCs. Best of all, the iOS tools are invariably less expensive than their computer-based counterparts, so you can grab an iPad and load it up with tons of synths, then experiment until you find one that fits your personal style—all without breaking the bank.

The coolest thing about integrating an iPad synth into your performances is the fact that so many of them include Korg Kaoss-style interfaces (including Korg's own iKaossilator app) so if you spend some time analyzing the key of your favorite tracks, then create presets for your iPad synths that constrain the interface to those keys and the proper scales, you can just whiz your finger around the touchscreen to play synth riffs, knowing that you're going to rock solid. This makes it easier to keep the DJ side of your performance under control, especially if you're picking and mixing the majority of your tracks on the fly.

With all of that in mind, the iPad approach is probably the most practical way to add either fine-tuned control or synthesis to your performances. Stay away from the iPad Mini for these purposes, as it's just too small for your fingers to be precise enough. Spring for the full-sized iPad Air or even the immediately previous fourth-gen model. You won't regret it.

Top iPad Synths

- Moog Music Animoog
- Wizdom Music MorphWiz and SampleWiz
- Korg iKaossilator
- Liine Lemur (controller app)
- TouchOSC (controller app)
- See our iPad DJ app roundup on page 46 and Korg Gadget review on page 62.

4. SOFT SYNTHS

Thanks to an abundance of extremely portable USB keyboard controllers—like the Korg NanoKey 2, Keith McMillen QuNexus, and let's face it, countless others—it's possible to add soft synths to your approach with a minimum of fuss. In Ableton Live, it's a simple matter of setting up an additional channel/track that contains one or more soft synths, then simply activating record on that channel while your DJing your set.

With Traktor and Serato, it's a wee bit more complex and requires a bit of at-home testing to make sure your CPU can handle the load of two robust, independent music programs at the same time. Why? Because since neither of those DJ apps support plug-ins, so the only synths that you can use in conjunction with them are those that have standalone operation. Fortunately, many of the most popular mainstream soft synths do (in some cases, you have to select it during installation). Arturia and Native Instruments offer standalone versions of all of their soft synths. Korg's Legacy collection also includes standalone versions of their biggest vintage hits. Rob Papen offers a free app called RP-Dock that serves as a wrapper for his line of soft synths, as well.

Of all five approaches, this is the most cumbersome as there are several factors involved for making things run smoothly. First off, you need to check and double-check that both apps can consistently access your audio interface while simultaneously operating *and* leave your CPU usage within tolerable limits. This includes trying out high-polyphony loads and lots of EQ and effects, while also searching your library for new tracks in real time. Yes, it's a fair amount of "road testing," but it's the only way to ensure there are no hiccups in your performances.

There's another caveat: Full-fledged soft *samplers* (think Native Instruments Kontakt or MOTU MachFive) are dangerous in this context because bandwidth demands can shoot way up depending on the samples you use. Imagine having two stereo audio files buffering from your hard drive, while simultaneously streaming multiple notes of polyphony (say, legato piano with sustain) from the same hard drive, which perhaps has some fragmentation from lots of use. With anything less than a 7,200rpm drive, you're asking for trouble. While an SSD may be fast enough for this type of work, you'll need one that's capacious enough to accommodate both your DJ collection and your sample libraries, with room to grow. Several soft samplers can alternately load all instrument data into RAM (if you have enough), but that's yet another time-consuming step, and setup and turnaround times between EDM acts in a dance club are notoriously tight.

It's also worth noting that some mini keyboard controllers come bundled with a few "lite" soft synths. For example, Korg's compact MicroKey 25 comes with a virtual M1le and a bunch of Applied Acoustics goodies. Novation also includes several synths with their controllers, including the BassStation and V-Station. It's definitely worth shopping around for a solid starter combo in this area.

One last word when performing with soft synths: Never overlook the untapped potential of the Keytar.

Top Mini Controller Picks

- Keith McMillen QuNexus
- Korg NanoKey2 and MicroKey
- Novation Launchkey Mini

5. HARDWARE SYNTHS

Well, duh. After all, the simplest approach is to bring a keyboard synth in addition to your laptop, audio interface and controller. At the very least, you'll be able to play it if your computer crashes. It also requires the minimum amount of maintenance and management of all five options we've examined.

The trick again is to find a portable instrument that suits your sound and fits in your gig bag. If you're an analog head, the Arturia MicroBrute is definitely the way to go. If you want club-friendly flashing lights and modern amenities, the Korg Kaossilator Pro and Roland TB-3 are great picks. And for ultimate hipster cred, consider the possibilities of more exotic gear like Yamaha's Tenori-On or Teenage Engineering's OP-1.

The bottom line with all of these options is to really go beyond just beat-matching two tracks by other artists. That era, as we currently know it, is about to end. It's time to blaze new trails in the world of live performance.

Top Compact Hardware Synths for DJing

- Arturia MicroBrute
- Korg MicroKorg, Kaossilator 2, Volca Keys
- Roland TB-3

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Ableton Live Mini Master Class

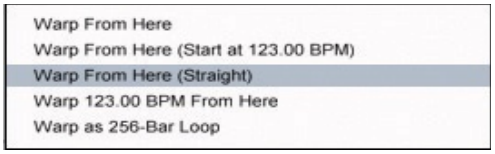
NEXT, WE'LL LEARN HOW TO TAKE FULL ADVANTAGE OF THREE FEATURES THAT make Ableton Live such a widely used platform for DJing and Live EDM Performance, and that we alluded to earlier: warping (time correction), integrating soft synths with beats and loops, and finally, syncing hardware grooveboxes via both MIDI and analog means.

WARP LIKE A PRO

One of the coolest things about Ableton is that it can keep absolutely everything in a session in perfect sync. The secret lies in mastering its warping tools—and not relying on Live's "assumptions" as to where to put warp markers when you import a track. For syncing recorded audio, this feature can be a godsend, but when you're working with flawlessly timed modern dance music, it's time to roll up your sleeves and perfect those warp markers so that every track is absolutely in time with all of your other elements. Here's how.

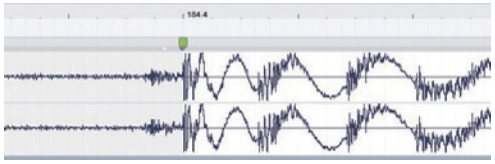
Step 1

Zoom *way* into your audio track and find the first downbeat (usually a kick) of the track. Then place a transient/warp maker at that position, right-click and select "Set 1.1.1 Here"



Step 2

Next, delete all other warp markers after this point by right-clicking again and selecting "Warp From Here (Straight)."



Step 3

Zoom into the final measure of your track and select the final kick drum on beat 4 of (for these examples, we're using four-on-the-floor tracks to keep things clear). Add a warp marker to that kick and make sure its transient is falling exactly on the correct beat. Once you've done this with a few tracks, test them against each other by mixing the end of each with the beginning of the others. If there are any inconsistencies, repeat the steps with a closer zoom.

Step 4

Finally, I've often been asked how I mix without headphones at my shows. Some people think I'm cheating and "just pressing play." Nothing could be further from the truth. Instead, I simply add warp markers at the exact points where the bass and/or melodic parts begin and end, since the majority of well-produced tracks include eight or more measures of isolated drums and percussion at their start and end. This is a standard production trick to make tracks easier for DJs to mix. By placing these warp markers at the musical high points of a track, I can avoid the dreaded "bass clash" effect where the low frequencies of conflicting bass lines wreak havoc with mix transitions.

THAT SYNCING FEELING

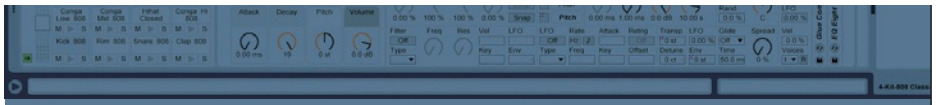
Syncing grooveboxes like the Roland Aira TR-8 or TB-3, Dave Smith Tempest, and Elektron Analog Rytm is a breeze in Ableton, thanks to their ability to receive MIDI sync information directly over USB. Sending over a five-pin connection is easy, too, if your audio interface has a free MIDI out port. Just go into your app's MIDI preferences and assign the clock to the appropriate port.

For analog grooveboxes that have an analog sync option and/or lack MIDI input, there's another way to do this via rolling your own old-school clock pulse track. I've tested this method in my studio, syncing the Korg Monotribe on several occasions, because the Monotribe doesn't have MIDI. This method will also work with a vintage Roland SH-101, if you're lucky enough to own one.

First, record the sync out of your Volca as an *audio* track into your DAW of choice. Make sure the signal is hot, but not clipping. Then, isolate one of the voltage spikes and crop it into a single sample. From there, drop it into one of your soft samplers (Ableton's Simpler is perfect for this, as shown here) and create a one-bar sequence playing straight sixteenth-notes, making sure the timing is perfect.

Once you've got that sequence running, route it from a separate output on your audio interface to the sync input in your analog groovebox. If you've got a dual-stereo interface like Native Instruments' Traktor Audio 2, you'll sacrifice a channel for this, which means you won't be able to cue tracks live—an important consideration here—but if you're using a more flexible interface, say, the MOTU UltraLite Mk. 3, you'll have spare outputs galore.

Once you've got the click going from your interface, you'll need to experiment to find the right output level to get your analog drum machine to sync consistently, but once it's done you should be all set. As with everything in your DJ rig, it's crucial to do a fair amount of at-home rehearsing and testing to make sure your system is bulletproof, but your audience will thank you.



INTEGRATING SOFT SYNTHS WITH BEATS

Once you've warped and arranged a few tracks to sketch out your set, it's time to add a few live instruments to your basic Live template for performance. While there are countless ways to approach this, it's helpful to have a starting point, especially since you'll also be integrating MIDI controllers. Here's how.

Here are your DJ channels with tracks. Whether you've gone with a pre-arranged set or are adding tracks on the fly, you'll need at least two tracks for mixing songs and remixes together.

Adding a MIDI track with your favorite instrument plug-in is the absolute easiest way to get a synth into your DJ rig. It's even more dramatic if you add tempo-synced LFOs and effects to your lead sounds to keep the riffs locked with your grooves.

To play your synths live, you can either set up Live's monitor input to always play the synth when you hit a key—or just toggle the record button on and off when you're playing, to avoid accidentally triggering notes as you whiz around the DJ booth.

Live's collection of analog drum machines makes it easy to add custom beats with vintage flavor. Here's their 808 kit in action. You can also use a pad controller to trigger drums and samples on the fly, using the same method outlined in 2 and 3.

In addition to triggering drums live, you can also make custom grooves and save them as clips that can be toggled or triggered at key points in your set.

For a really polished sound—and no blown speakers—put a limiter on your master output. Adding loops, synths, and drum hits raises the overall level of your mix, and a limiter will help keep it in line. It's also good to get a feel for your levels when rehearsing at home, as opposed to having a part come in too loud at the gig.

TO SET LIST OR NOT TO SET LIST?

This is a hotly debated topic in the DJ world, because purists contend that the real art of DJing is reading the vibe of the crowd and going on an improvised journey together. But both pre-ordering your set and mixing tracks on the fly have advantages and disadvantages.

Pre-Arranging Your Set

Ask any DJ who cut their teeth on vinyl : When you can only bring one crate of 50 records to a gig, chances are your track order is well rehearsed. This drives down risk and lets you figure out exactly what other live/synth elements you're going to perform in tandem with your tracks.
PROS: You can select tracks with complimentary keys and grooves in advance. You can rehearse transitions and riffs at home or on the plane. Less risk of an ill-timed choice. Lets you focus on crowd interaction, rather than on trying to be a psychic. Sounds slicker overall.
CONS: Hipsters will complain behind your back. If the crowd isn't into what you're doing or the turnout is low, you're locked in with no escape. If the club manager asks you to change it up, you're screwed. More advance preparation time.
TIP: Start your set with a lower energy, groovier vibe, then gradually build up to bangers, and everyone's tastes will be covered.

Improvising

While I personally prefer planning large chunks of my sets in advance, I've encountered more than a few gigs where I've had to throw out the entire map and wing it—and these have been some of the most inspirational sets I've ever played.
PROS: If you have a sufficiently diverse collection of tracks, you'll be prepared for anything. Lots more street cred. Deeper level of interaction with the crowd. Adrenaline.
CONS: Requires searching for tracks on the fly, which can take your attention away from the crowd and your performance. Cueing up tracks on headphones really isn't that fun. Potential key clashes and other embarrassment if you're getting started.
TIP: Thoroughly rehearse live accompaniment for 3-5 guaranteed crowd-pleasers (in a variety of grooves and styles) and always have them ready to perform at a moment's notice.

The DJ Gig Bag Survival Kit

IN ADDITION TO YOUR LAPTOP, software, audio interface, MIDI controller, and synth, there are a few small items you absolutely should not be without for a DJ or live EDM set. Everything on this list could save your gig if need be.

Flashlight

First and foremost, you should always have a sturdy but small flashlight—the bright LED kind. I've seen other DJs try to get by with their smartphone flashlight, but it's not enough when you're jacking into a mixer in a dim or completely dark DJ booth. A decent flashlight will save the day far more than you know.

Backup Cables for *Everything*

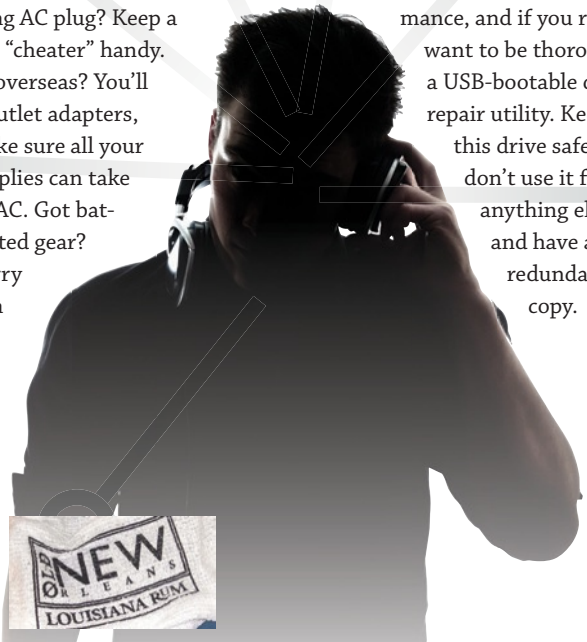
For many keyboardists, this is just an extra few pairs of 1/4" cables. For laptop DJs, it's more complex. You'll need an extra mini or micro USB cable for small controllers like the Korg Nano series. You'll need extra full-size USB (or FireWire or Thunderbolt) cables for your audio interface. Extra RCA cables? Yep—and unless your audio interface has RCA outs, 1/4"-to-RCA cables (shown) are a must, as you may have to plug into a house DJ mixer that has only RCA inputs. Keep them all in a small zippable pouch separate from your other gear.

Adapters

Most DJ mixers have a 1/4" jack on the front for plugging in headphones for cueing up tracks. Most laptops have a stereo 1/8" jack on the side. So make sure you have more than one 1/8"-to-1/4" adapter so that you can plug your headphones into either. If you're using a Native Instruments' Traktor Audio 2, you can attach this adapter to a standard 1/8"-to-RCA cable from any Radio Shack, in case you lose NI's custom cables. Does your laptop power supply have a three-prong AC plug? Keep a two-prong "cheater" handy. Traveling overseas? You'll need AC outlet adapters, and to make sure all your power supplies can take 220-240VAC. Got battery operated gear? Always carry extra fresh batteries.

Emergency Flash Drive

This is your parachute if you have a total laptop failure and can manage to rent, borrow, or buy a laptop before the show. Get a 16GB USB2 model and put the following items on it: A spare installer for your software, current drivers for all interfaces and controllers, a collection of 100 or 200 tracks that are part of your repertoire, any loops or presets that are essential to your performance, and if you really want to be thorough, a USB-bootable disk repair utility. Keep this drive safe, don't use it for anything else, and have a redundant copy.

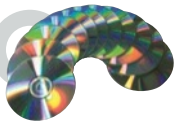


Bar Towels

Laptops hate vibrations far more than CD players, and you'll eventually end up in a club with way too much bass in the DJ booth. That means a standard hard drive could lock, go into safe mode, or worse. Many "rock star" friends of mine have learned this the hard way. The fix? A few bar towels under your laptop, distributed evenly.

Ear Plugs

Nightclubs are *loud*, so protect your ears while you're in the audience. Custom molded ones are better but pricey. I like the Etymotic brand for the price. It's also worth having a couple of pairs of the cheap foam ones in your bag . I actually keep two pairs of the foam ones in the coin pouch of my wallet. They've saved the day more than once.



Emergency CDs

Sometimes, your laptop fails during a set—it really happens—and you're screwed. For this, have at least one (two's better) sure-fire mix CD that *you've* made in your spare time. I know DJs who routinely keep this CD in one of the CD players at every gig. If there's a crash or major hiccup, they can quickly hit Play (there's that phrase again) and let the mix CD go until they can figure out what's wrong.

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Scott Frankfurt in his studio.

THE ART OF SYNTH SOLOING
Holistic Lead Synth Programming
PART 1

BY JERRY KOVARSKY

THIS MONTH WE GET A WONDERFUL MASTER CLASS ON SOUND CREATION from one of the "secret weapons" that I and other veterans of the synth industry have employed over the years. Scott Frankfurt is an artist, engineer, sound designer and producer *par excellence*, who worked with me at Ensoniq for many years, later doing patch design and demos for Korg, E-mu, and Yamaha. He is currently the Vice President of Design at Spectrasonics, working closely with founder Eric Persing and the team developing their synths and sounds while running a world-class studio. [*In his spare time? —Ed.*] This month, we'll examine Scott's views on all the successful marks a lead synth solo sound needs to hit. Next month, we'll look at a specific application of these principles from a patch he designed for Omnisphere.

A lead synth sound needs to "cut through" the sonic space in which it's set. Keep in mind how focused the bandwidth of a lead guitar is. You don't want a frequency-bloated sound that masks everything, or worse, gets masked by everything else. It needs to play nicely with others. That said, there's room for a lot of diversity here. A smooth lead sound perfect for instrumental jazz is not going to work for hard progressive rock, for example.

It should include a satisfying attack characteristic that gives tactile feedback to the player. Percussive or not, the attack needs to be interesting in its own right (think about repeated short notes), and developing interest on the velocity axis is crucial. In the case of a sample-based sound, try modulating the sample start time via velocity. For samples with a prominent attack transient, start the sample playing just after the attack portion for a softer attack, and then modulate the start point backwards via velocity so the harder you play, the attack portion gets used. For other samples, routing velocity to start point can add slight randomness to each attack, which sounds more interesting and less repetitive (see Figure 1).

The ear and brain make a decision about what a sound is and whether it's pleasing within about 500ms, so it's important to work some character into this crucial time period. In the case of a synthesis-based oscillator, an amplitude or pitch "bump" or "blip" using envelopes can add character to the attack period.

Another example of this would be to modulate an engine parameter (like a bit-crusher, waveshaper, small amount of FM, grain shifter, fast-rate pulse width modulation, or even bringing in another oscillator that provides a short transient) to get the attack to "speak," and then use velocity to control how much of this is heard. Anything you can employ to bring variance to the initial 40ms is desirable.

Related to the attack, legato/solo mode is typically desirable for leads. This gives the player more articulation options by letting intuitive legato playing technique determine envelope re-triggering.

The sustain segment must be compelling. Harmonic activity is important for sustain—this is where the *emotion* is. This sonic movement, even if it's subtle, enhances held notes, allowing them to "sing" for quite some time. Synth soloing is similar to singing from a phrasing point of view, so you should dial in slow but steady modulation of harmonics to create the same effect a good singer naturally employs, subtly varying the sustained tone.

The personality of a sound can come from a myriad of places, so start by listening to what the waveform is already telling you. Is it squawking a certain way? Then, try to dig that out or enhance it even further, maybe with a filter or effect, and lightly modulate that. Is it super fat already? If so, then perhaps thin it out slightly it over time. Is it really thin and edgy? Go in the other direction and introduce some fatness over time.

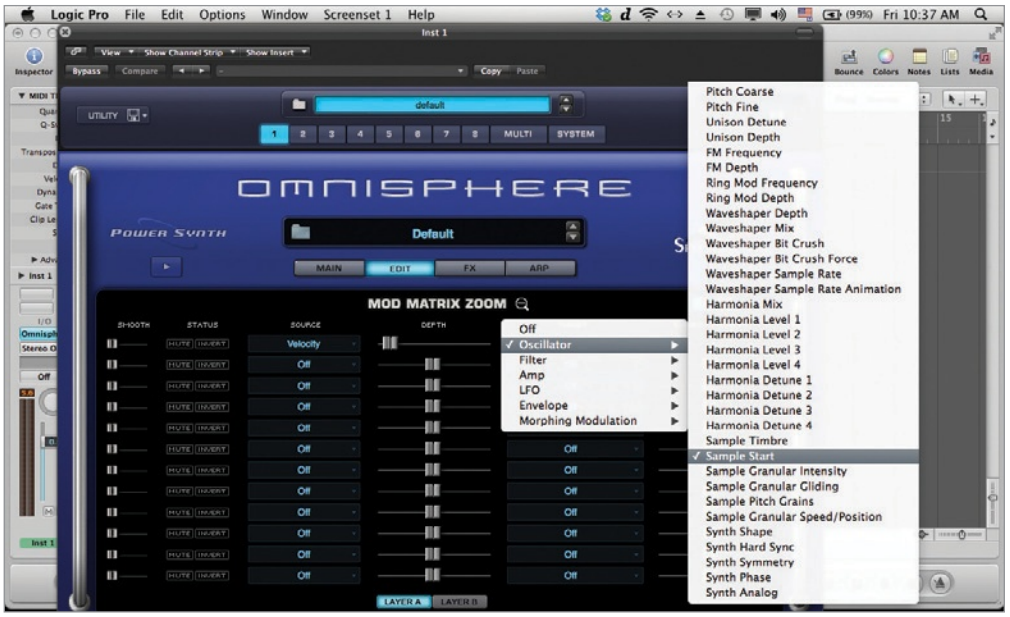


Fig. 1. Routing velocity to sample start time in Omnisphere.

Fig. 2. Delays with built-in filters.

Performance tools must be created for the player to interact with. Nothing is more satisfying to a soloist then reaching for the modulation wheel and hearing something awesome happen as it turns. An ideal scenario is where the initial patch sounds great, but this is only the tip of the iceberg. Performance controls (wheels, pedals, ribbons, and the like) should reveal the rest. In Spectrasonics Omnisphere, a great way to do this is to modulate the "Harmonia Depth" feature to reveal more voices tuned to various octaves, fifths, or other intervals. You can simulate this in any synth that has enough oscillators.

Frankfurt also likes to simultaneously modulate an effect so that the sound gets fuller harmonically, while also getting dirtier via sample rate modulation or distortion. Another trick is finding a key parameter that has two sonic sweet spots, and limiting a performance controller (slider, knob) to target those spots as modulation boundaries. Alternately, you could use two switches to offer dedicated variations on a modulation possibility.

The finish. A solo lead sound should get out of the way quickly when you let up off the keys, so a fast release works great. This not only enhances playability but also makes room for the effects to speak. Here, Frankfurt prefers delay to reverb as it's more transparent and doesn't disappear as easily as reverb does. He'll even band-limit the delays to create more space if possible, by thinning out the delays. Omnisphere, and many cool plug-ins such as SoundToys Echo Boy and Delay Designer in Logic Pro, offer integrated high-pass or band-pass filters to achieve this (see Figure 2). Or you can put the delay effect on a send bus and insert the filter onto the return channel strip.

Release velocity. If available on your controller keyboard, try using release velocity to modulate envelope release time so that a fast key-up causes a fast release time; and a slow key up causes a slow one. Details like this increase playability.

Don't overdo the amplitude dynamics. Lead sounds are far more playable if the volume "hangs in there." The typical velocity-to-amp modulation is not as useful as modulations that alter the tone of the sound. So when programming synth lead patches, use minimal velocity control over the amp level or amp envelope. Instead, let velocity control the filter, oscillator modulation, effects, and such.

Make vibrato like an electric guitar's. Frankfurt prefers a triangle- or sine-wave vibrato that modulates in the positive phase only, with a maximum pitch depth of not more than a minor third. Years ago, he took a close look at Steve Lukather's guitar vibrato style on a pitch scope, since Lukather among the most recorded guitarists alive. The positive phase over a minor third at the furthest position of the wheel most emulates his natural bending of a fretted note (notwithstanding whammy bar technique of course, which can hit both positive and negative phases). If this was a violin sound, we would approach the vibrato differently, but for synthesizer lead sounds, electric-guitar style vibrato sounds great. ♫

For more about Scott Frankfurt, visit scottfrankfurtstudio.com.

Gotcha!
COMPUTER GLITCHES AND FIXES

BY CRAIG ANDERTON

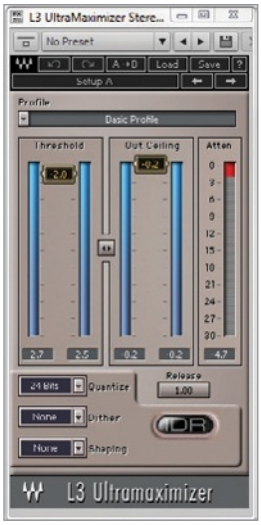


Fig. 1. Waves L3 Ultramaximizer is a precision multiband processor with a look-ahead feature. To minimize latency during the tracking process, use it only after you've started mixing.

IF YOU WORK WITH COMPUTERS, VIRTUAL INSTRUMENTS, AND DAWS, YOU'VE surely encountered those weird, unexplainable issues that bring your project to a screeching halt. Here are some common "gotchas" (with an emphasis on Windows, although many of these tips apply to the Mac as well) and the appropriate fixes so you can sort things out and return to your creative flow.

Sudden major latency increase. Some plug-ins, particularly dynamics programs like precision multiband limiters (see Figure 1), have a look-ahead function that creates a delay so they can catch transients and be prepared to process them correctly before they happen. But if your DAW has delay compensation, this delays *everything*. **The fix:** Remove the plug-in until mixdown, or temporarily substitute a similar one without the look-ahead feature.

Missing VST plug-ins. Steinberg invented the VST specification, so installing a Steinberg program with plug-ins created a Steinberg > VST-plugins folder. Many subsequent non-Steinberg programs defaulted to installing plug-ins there. However, nowadays programs often create their own plug-in folders during installation and point to them as the preferred plug-in location. **The fix:** Search for folders containing VST plug-ins, and make sure that any hosts point to all paths that lead to plug-in folders (see Figure 2). Another option is to create a single VST plug-ins folder, and when you install a program or new plug-ins, install your plug-ins there. Finally, re-scan the VST folders once you've specified all their file paths.

Program crashes on startup when scanning VST plug-ins. Some plug-ins (particularly free ones) may not get along with a particular program and when scanned on startup, they'll crash the program. Sometimes whatever scans the VSTs will show the name of the plug-in on which it stopped, but sometimes not. **The fix:** Close the program. Create a folder called "Temporary VST." Move half of the plug-ins from your existing VST plug-ins folder to the temporary folder, then open the program. If it doesn't crash, one of the plug-ins you moved caused the problem. Keep moving plug-ins back to the original folder until you find the one that crashes the program. If the program does crash, move half the remaining plug-ins and continue the process until you locate the offending plug-in.

A manufacturer's audio interface driver for Windows doesn't work at low latency settings. The driver works, but requires huge buffer settings to avoid crackles and pops. **The fix:** ASIO4ALL can interfere with some drivers. Uninstall it (don't just disable it—remove it) and see if the problem goes away.

Moving the mouse interferes with audio performance. All is well until you try to adjust controls, move a window, or perform some such common action, and then you hear crackles or dropouts. **Fix 1:** Check for graphics card driver updates. Outdated ones may be the problem. **Fix 2:** If you're using a gaming mouse, substitute a standard mouse. You don't need the extra resolution. **Fix 3:** Graphics cards designed for high-performance gaming are often not a good match for audio performance. A basic graphics card often gives better performance with DAWs.

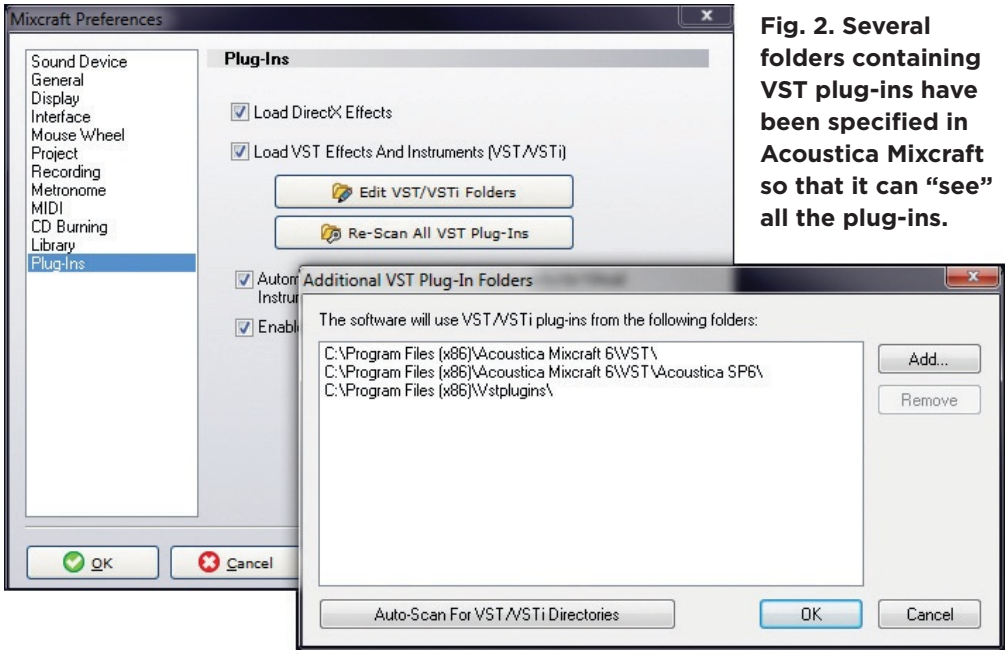


Fig. 2. Several folders containing VST plug-ins have been specified in Acoustica Mixcraft so that it can "see" all the plug-ins.

After installation, program crashes or acts erratically. Programs should *work* after you install them! **The fix:** Anti-virus software may not allow the program to do needed system modifications. Uninstall the program you just installed, disconnect from the Internet, disable any anti-virus programs (see Figure 3), then run the program installer again.

Virtual instrument has issues with some hosts but not others. This is almost always a straightforward compatibility issue. **The fix:** Check online user forums to see if others have the same problem, then check regularly for software updates. It can take a while before system-specific incompatibilities surface so that manufacturers can know what to fix.

Virtual instrument doesn't respond to aftertouch. Most DAWs have a preferences menu for enabling various MIDI input messages, but the instrument still doesn't respond even after you've enabled aftertouch. **The fix:** There are two aftertouch types: channel and key (polyphonic). Channel aftertouch is far more common, so make sure you've chosen the right one.

In Windows, you can't see the plug-in interface when inserting more than a certain number of instances of the same Waves plug-ins. While this might not seem likely, it can happen if you use something like the NLS virtual console plug-in on each track. **The fix:** Create a folder called "Waves Audio" in C:\ProgramData. Then create an empty text file called "no_context_sharing.txt" and move it to the Waves Audio folder.

Stereo placement sounds weird when collaborating with someone using the same host and loading the same file. You don't hear a huge difference, but there are subtle issues. **The fix:** Check for panning law preferences in both programs (see Figure 4), and make sure they're set identically.

There are strange, rare, random problems with a variety of computer programs. Don't re-install your operating system yet; it could be a hardware problem. **The fix:** A defective RAM stick could be responsible, because issues show up only when accessing the bad bits. There are several utilities for checking RAM; MemTest and MemTest86 are free and open-source.

Windows is saying your drive is protected, and you can't override security attributes. You're stuck in "read-only" land and can't modify files or write to the disk. **The fix:** (Make sure you type anything that follows in bold exactly as shown.) Click on the Windows Start button, and type **CMD.EXE** in the search box. When a command line prompt opens, type **diskpart** then hit Enter. Type **list volume** then hit Enter.

You'll now see a list of drives, each with a number. Identify the number of the protected drive, then type **select volume #** (where # is the appropriate drive number), then hit Enter. Next, type **attributes disk clear readonly** then hit Enter. When you see "Disk attributes cleared successfully," you're done—close the command prompt box.

Operations that used to happen quickly in Windows, like bouncing to disk, now take forever. For example, rendering or freezing a soft synth track takes an hour. **The fix:** For reasons not understood by mere mortals, a disc sitting in your optical drive can slow operations down if the computer keeps looking to the disc to see if there's something it wants to find. Eject the disc.

PreSonus FaderPort controller won't work with a particular DAW. FaderPort ties in closely with your DAW, so take the right steps. **The fix:** First, go to presonus.com/support/downloads/faderport to download and install the latest drivers. Next, go to support.presonus.com/forums and enter "FaderPort" in the Search box. You'll find documents on setting up FaderPort with various DAWs. ♫

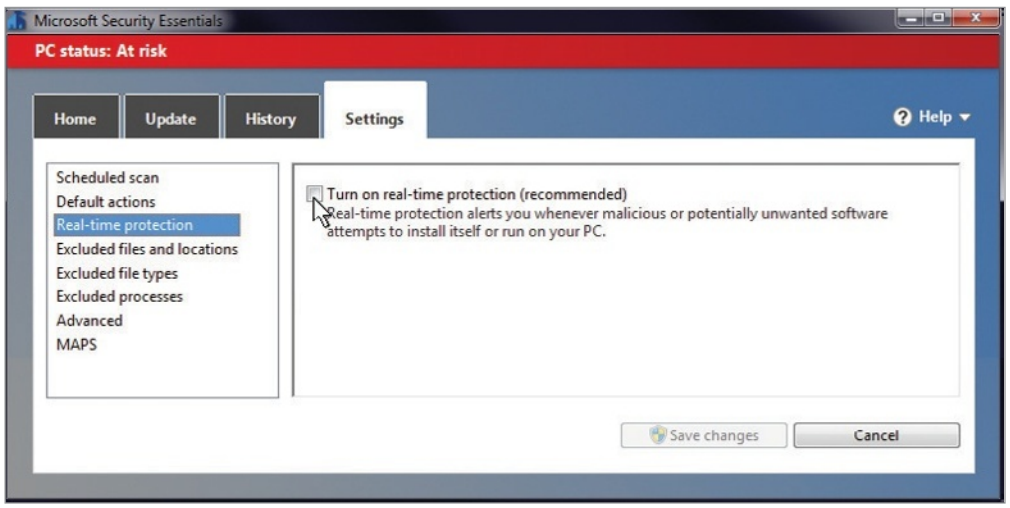


Fig. 3. Windows Security Essentials is a relatively unobtrusive program, but disable it after downloading new software—then install your new music production software, unless it requires an internet connection.

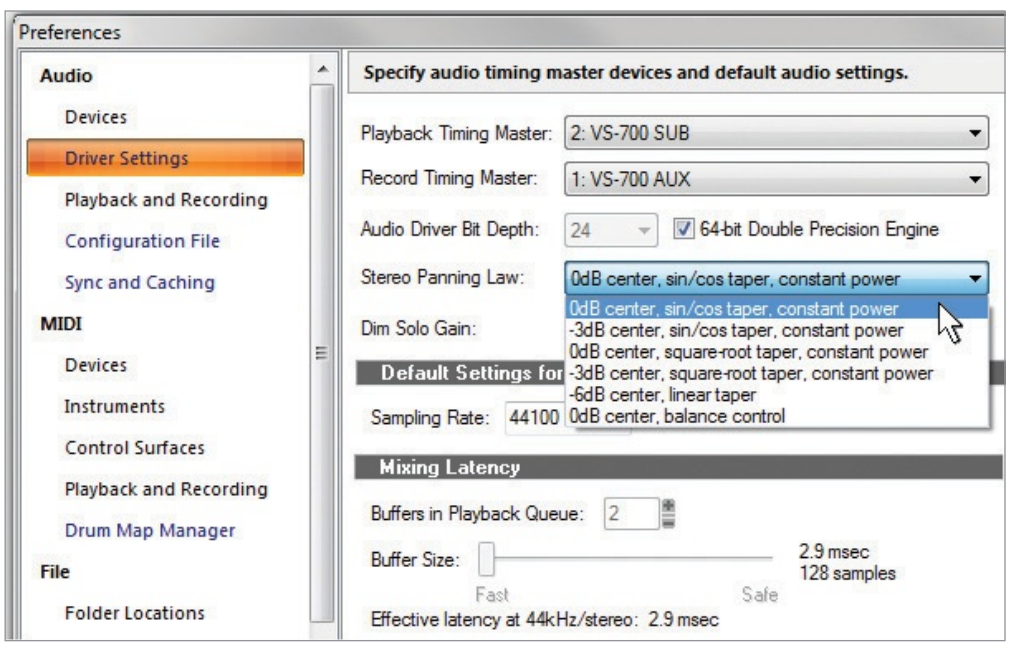


Fig. 4. Cakewalk Sonar provides several panning law options. When collaborating, make sure the same one is specified in everyone's preferences.

How-to guru Craig Anderton is one of the founders of music technology journalism. His latest adventure involves wearing the mantle of "Chief Magic Officer" at Gibson Brands.

Polyrhythms

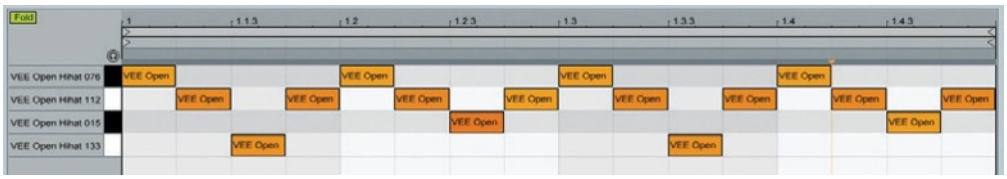
COMBINING LOOPS OF DIFFERENT TIME SIGNATURES

BY FRANCIS PRÈVE

I'VE ALWAYS BEEN FASCINATED BY THE INTELLIGENT USE OF POLYRHYTHMS IN dance music. Some artists, most notably Deadmau5, Matt Lange, and BT, have dabbled with them over the years, but I'm honestly surprised that it's not more common. So this year, I made a resolution: Release tunes where some tracks superimpose unusual time signatures or odd phrase lengths on what's foundationally a 4/4 dance floor groove.

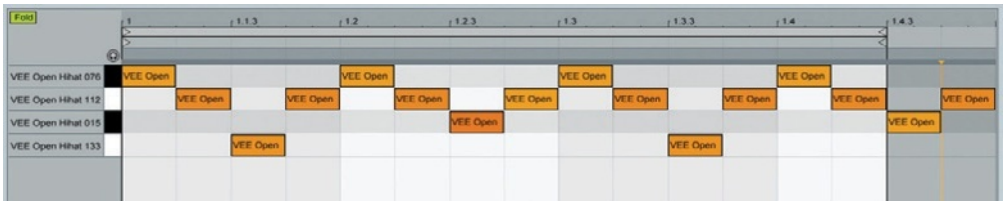
Example 1

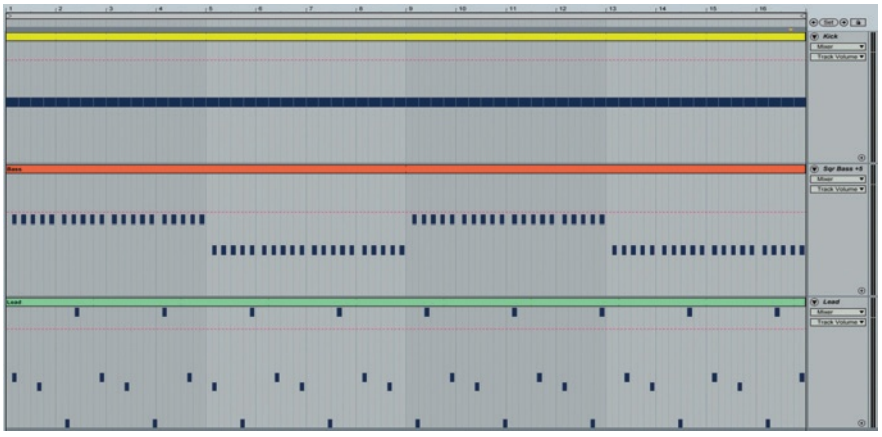
For example, on my upcoming remix for Bright Light Social Hour's new single "Infinite Cities," I wanted to keep the sixteenth-note hi-hat pattern interesting in a subtle way. First, I composed it in 4/4, using four different hat sounds to create a rhythm that wasn't static.



Example 2

From there, I transformed it into a loop in 7/8 time, by simply changing Live's clip loop positions so that the final eighth-note was excluded. The result is a constantly evolving top part that involves the ear without dominating the overall rhythm awkwardly. Working with multiple time signatures can get messy very quickly if you aren't careful. Of course, the *song* is in a single time signature (4/4), and on score paper the hi-hat loop would be notated appropriately, *i.e.*, as a recurring seven-note phrase that plays across bar lines. However, dance music producers tend to think of parts in an arrangement as independent "objects" with their own "properties," so treating the loop as "its own thing in 7/8," while technically less than correct, is more intuitive.





Example 3

Once you've got the hang of mixing time signatures, it's time to experiment with melodies. Dance music rarely strays from simple keys and modes, so with a little planning you can create cycling polyrhythms that don't step on each other. For my latest track "GUPC," I took a simple two-chord progression, then looped the lead riff over it in 7/4 (basically, a two-bar loop with the last quarter-note cut out). The result is a lead that is constantly changing in melodic relationship to the underlying progression—and a track that got the attention of one of the hottest trance duos in today's scene: Myon and Shane 54.

With those techniques under my belt, I plan to incorporate more sophisticated polyrhythmic elements into upcoming tracks. It's a new way of thinking in the context of EDM, but for me, the results are well worth it.

SOUNDCLOUD Original audio examples.

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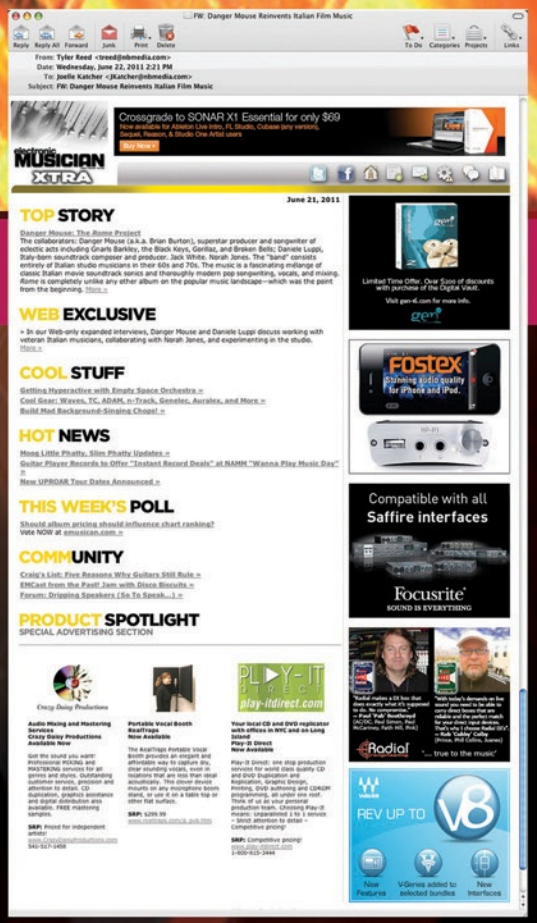

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The Best DJ Software for Musicians

BY FRANCIS PRÈVE

SO YOU'RE READY TO MAKE THE LEAP INTO PERFORMING AS A DJ—OR, AS THE artists profiled in this issue have shown is possible, a live performer of danceable electronic music. Your choice of software will determine what you can achieve with your rig.

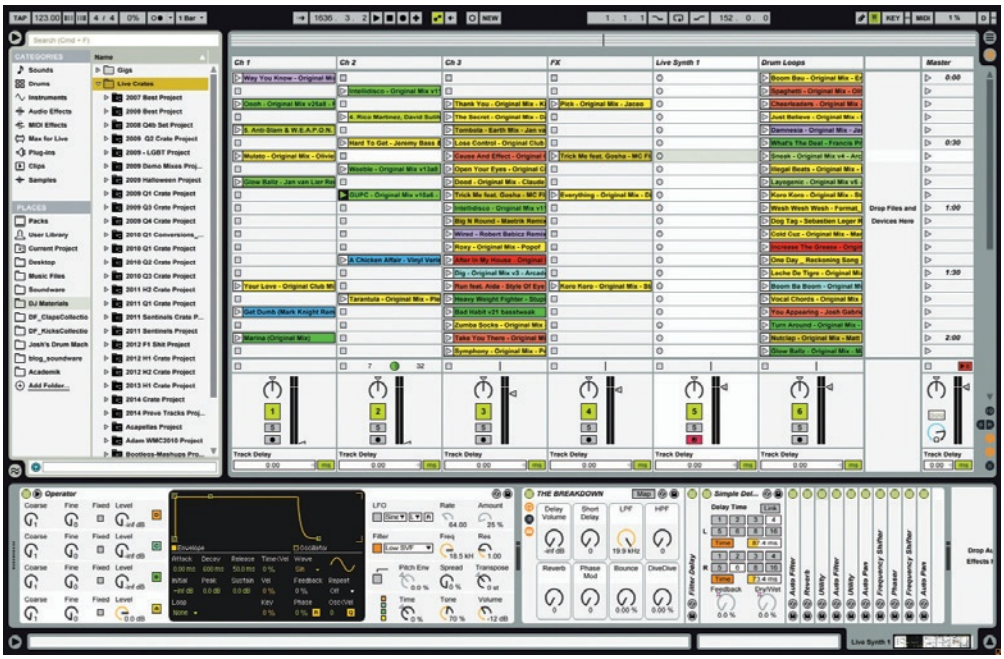
With a decade's worth of laptop-centric DJ tools on the market, it can be tough to know where to begin. There are apps that are especially synth- and loop-friendly, as well as excellent options that focus on performers who come from a traditional DJ background.

If you're new to keyboards and got your start on turntables or CD decks, Serato's Scratch DJ and Virtual DJ's eponymous Virtual DJ Pro will feel most familiar. If you're coming at this as a keyboardist, both of those apps require that you master entirely new turntablist skills—daunting, to say the least.

With all of that in mind, we've picked a few software packages—for both laptops and iPads—that will deliver the ability to mix full tracks and songs with more modern production amenities like loops and soft synths, giving you a huge bag of performance tricks right out of the gate.

Ableton Live

It's no secret that a huge number of producers and DJs rely on Ableton Live for their performances.



The author's Ableton Session view for a recent DJ set. Channels 1 and 2 serve as the "decks" for his DJ set. Channel 3 holds a reserve of alternate tracks he can pull in to extend his set, and the FX column contains heavily processed tracks meant to be superimposed on other tunes. Across the bottom are the Operator soft synth and effects chains.

Snap Judgment

PROS Complete integration of songs, loops, soft synths, and virtual drum machines. Huge assortment of effects and MIDI processors. MIDI control over everything. Ability to create custom macro knobs for sweeping multiple effects parameters. VST and AU support. Large ecosystem of dedicated hardware controllers.

CONS Live's auto-warping often requires manual editing of results for perfect sync. No key detection of imported material. Limited metadata for track organization. All this flexibility means a steeper learning curve than standard DJ tools.

Bottom Line

If you want nearly unlimited expandability in exchange for a bit more overall effort, Live is the gold standard for integrating musical performance with DJing.

Live 9 Standard: $449
Live 9 Suite: $649
ableton.com

For the most part, Live is *the* perfect tool for keyboardist-producers who want to make the leap into DJ-style live performance; but even so, there are a few caveats when compared to other options.

On the plus side, Live is built from the ground up for on-the-fly *everything*. It allows you to mix full tracks with time-locked loops, create killer beats in real time, *and* play soft synths—all at the same time. It also supports third-party plug-ins and has a huge ecosystem of hardware controllers, many designed specifically for Live. This is why Live is the go-to platform for main-room artists like Deadmau5, Steve Duda, Sasha, Gabriel and Dresden, and a slew of other household EDM names.

If you're not already a Live user, however, there will definitely be a learning curve. For example, while Live does an admirable job of automatically syncing audio material when it's imported ("warping" in Ableton parlance), it's not perfect. So you'll have to familiarize yourself with optimizing your raw materials by hand, which at first can be laborious. What's more, despite its magical ability to convert audio to MIDI, there's no key-detection algorithm for songs. So if you want to add this kind of metadata to your tracks, you'll have to do it manually in the clip names.

Part of the reason for this is that Ableton has wisely focused on being a full-fledged music production platform, albeit with that on-the-fly emphasis. So being able to *DJ* in Live is almost an afterthought. That's not a diss; it's just further proof that, for integrating musicianship and production chops with a DJ set, Live arguably remains the 800-pound gorilla of the dance music world—especially as the club scene expands beyond DJing into more innovative territory than just mixing and beat-matching stereo tracks.

If you're using a different DAW for production—especially one that's timeline-centric—you have to take a good look at what you want to do as a performer. If you want to focus on the DJ aspect with a little live performance on a synth or drum machine thrown in for good measure, Live may not be your best bet. The other tools in this roundup are more immediate, if less flexible. Additionally, a lot of producers are still strangely put off by Live's Session view, saying that it looks like an Excel spreadsheet.

Well, looks can be deceiving, because Session view is quite possibly the biggest innovation in production tools since, well, maybe the DAW itself. Non-linear composition and performance aren't the future. They're the *present*. So if you're ready to move past your preconceptions, you just might find yourself migrating to Live for more than just gigging.

EDM artist Matt Lange's Traktor setup. Note that his fourth deck is set up to play loops.

Native Instruments Traktor Pro 2

While Traktor got its start as a DJ-centric product, it's grown over the years to include a boatload of remixing and processing amenities that make it a worthy alternative to Live, depending on your approach to performing. Make no mistake, Traktor is not a production environment, so you won't be composing studio music in it anytime soon. But if you're looking for a system that leans more toward DJ mixing, without sacrificing the ability to radically transform your songs and sets, Traktor has a lot to offer.

The essential approach is simple: You can have up to four simultaneous "decks," up to two of which can be used as "remix decks." A remix deck can contain up to four simultaneous sample channels. Each channel can use one-shot samples, loops, or even the stems (instrument subgroups such as drums, bass, top loops, etc.) from popular tracks, which can be purchased directly from several outlets including Native Instruments themselves and Beatport. If you've amassed a sizeable loop library of your own, you'll be in heaven, because these can be imported into the remix decks as well.

For audio processing, Traktor includes a wide array of EQs and effects that cover the entire range of standards such as reverbs, delays, flangers, lo-fi, even one-knob macro effects. In a nifty twist, you can even select your EQs (globally) from a variety of different emulations based on classic DJ mixers from Pioneer, Allen & Heath, and Numark. That said, if you have a set of preferred VST or AU plug-ins, you're out of luck, as there's no support for either, nor for soft synths of any kind.

One of Traktor's greatest strengths is the ability to organize and sort all of your DJ material, including both full tracks and remix clips.

Snap Judgment

PROS Completely integrated approach to mixing full tracks with loops and stems. Can display all waveform data simultaneously. Tons of built-in effects and EQ types. Parameter control is higher-res than MIDI when used with NI's own hardware controllers. Can auto-detect and sort by musical key. Integrating external gear is painless.

CONS No support for soft synths or plug-ins of any kind. Can only send MIDI sync, not receive it.

Bottom Line

If you're not already producing in Ableton, Traktor deserves a very close look thanks to its immediacy and wide array of performance and processing tools.

$99 street
native-instruments.com

The overall approach is similar to iTunes, including playlists, but with the addition of sorting via key and tempo, making it super easy to get to everything into your "crate." In fact, when you import new tracks into Traktor, it auto-detects the musical key (much like Mixed In Key) and adds that metadata to its database. Better still, when you're sorting by key in the middle of a performance, Traktor lets you view this info via the Circle of Fifths, which makes things extremely intuitive for performers who know a bit of theory.

Although there's no soft synth hosting, you can turn any deck into a live input for microphones, line-level signals, or whatever your audio interface supports, letting you pipe a drum machine, synth, or iPad through Traktor. Traktor can send (but not receive) MIDI sync over USB, so you can lock a drum machine to your BPM and bring its audio back into Traktor for processing and mixing.

Though some producers will prefer Ableton Live because it's also one of the top DAWs, quite a few producers have switched to Traktor because of its focus on controllerism and fluid mixing of audio from a wide variety of sources. You can get the software by itself, or bundled with most of NI's Traktor Kontrol hardware controllers.

IPAD APPS FOR DJING

LET'S SAY YOU JUST WANT TO DIP A toe into these DJ waters and experiment to see if it appeals to your performance sensibilities. If you have an iPad, you're in luck, because there are a few capable apps that will let you started, using your iPad's music library, for less than 20 bucks each.

Algoriddim Djay 2

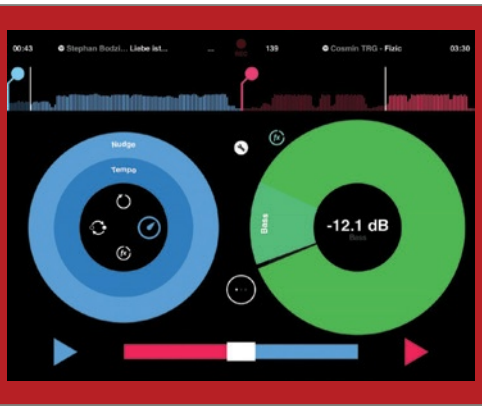
Algoriddim's original Djay iPad got a big boost from Apple when it was included in their earliest iPad announcements and presentations, because of its gorgeous turntable-based interface and ability to give almost anyone the chops to rock a house party.

Last year, Algoriddim unleashed Djay 2, with a truckload of Traktor and Serato-esque amenities such as key detection, iOS inter-app audio support, EQ, Kaoss-style effects, and the ability to instantly toggle to sample-triggering with a drum pad style interface. Better still, many of these features are compatible with a range of MIDI controllers, including popular DJ products from Vestax and Pioneer.

For ten bucks, Djay 2 delivers a surprising amount of performance functionality and seems poised for further growth as a legitimate option for live performance.

IOS DJ APPS

	ALGORIDDIM DJAY 2	NATIVE INSTRUMENTS TRAKTOR DJ	SOUNDTRENDS META.DJ
PROS	Includes sorting by tempo and key. Integrated beat-matching and sync tools. Drum pad interface for triggering samples. Integrated sample packs from Qbert and Snoop Dogg. MIDI control over a range of parameters.	Gorgeous, clean interface. Ability to fine-tune your track syncing via a simple four-beat grid interface. Integrated EQ and touchpad effects. Pairs flawlessly with NI's Traktor Kontrol Z1 controller.	Fully customizable, with five different instrument devices. Integrated Kaoss-style effects. Intuitive user interface. Blurs the line between DJing and musical performance. Compatible with earlier iPads, including iOS 4.1.
CONS	Key detection requires an iPad Air or iPad Mini Retina.	Only two track decks. No sampling or loop layering at this time.	At press time, hasn't been updated since version 1.6 in 2012.
Price	$9.99	$9.99	$19.99
Website	**algoriddim.com**	**native-instruments.com**	**soundtrends.com**



BREAKING NEWS

Just announced at South by Southwest, a new app called Pacemaker integrates your Spotify account with its DJ tools, giving access to almost any track on Spotify (and in your iTunes library) as part of your "crate." It has a simple interface and a ton of tempo-synced effects. Expect a full review soon.

SoundTrends Meta.DJ

When I reviewed Meta.DJ back in October 2012, I immediately fell in love with its approach to integrating decks, loops, arpeggiators, effects, and drum machines. Of all of the DJ apps available for the iPad ecosystem, Meta.DJ feels the most like a cousin to Ableton Live.

The basic concept for Meta.DJ is simple: The screen contains four quadrants, each of which can contain one of five musical devices: Track Decks (an iTunes-integrated track player), Drumtron (a drum machine), One Shot (sample triggering "pads" onscreen), Looptastic (a loop player with up to eight custom loops), Riser (for adding rises and whooshes on-the-fly), or Sampl3r (a sample-based synth/arpeggiator).

If you want to create a setup with two Track Decks, a One Shot, and a Looptastic, no problem. Want to create a different setup with two Looptastics, a Sampl3r, and a One Shot? Go for it. What's more, each of these configurations can be saved and recalled for different parts of your performance.

With that kind of flexibility, it's a bit of shame that Sound Trends hasn't updated Meta.DJ in a while. While that may be a cause for some concern, that doesn't mean it's not still 100 percent viable. In fact, I recently tested it on an iPad Air, and the extra horsepower made the experience even more fluid and enjoyable. If you're looking for a more techy, quasi-music-production approach to your iPad sets, Meta.DJ is your best bet.

Native Instruments Traktor DJ

Native Instruments' iPad version of Traktor is the most traditionally DJ-centric of the iPad apps discussed here, but that doesn't mean it's not a great choice for getting your feet wet. While it's limited to two track decks and doesn't provide live tools like sample-triggering or the ability to layer additional loops (yet), it's still got some great amenities like trackpad-based delay, flanger, and a cool-sounding filter gate. Its integrated EQ is a nice touch, as well.

What's more, Traktor DJ for iPad is also compatible with Native Instruments' own Traktor Kontrol Z1 mixer interface, so you can get truly hands-on as you spin tracks in it.

Although Traktor DJ is the simplest of the three apps, it's also the newest, which means that it's inevitable that there will be powerful upgrades in the future, and it's reassuring to know that it's got the full support of one of the biggest software developers in the industry.

ROLAND
Aira TR-8

Keyboard K KEYBUY AWARD

BY FRANCIS PRÈVE

IN 15 YEARS OF WRITING ABOUT MUSIC GEAR, I'VE NEVER SEEN A BUZZ QUITE like the one surrounding Roland's new Aira series. It was the talk of NAMM 2014 even though it wasn't exhibited publicly, and blog after blog covered the teasers leading up to its release. When it finally hit the market, nearly every outlet rushed a video review of the products—more than a few of which telegraphed the reviewers' unfamiliarity with the original TR-808 and TB-303. My first synth teacher, David Kane, let me spend hours with his TR-808 back in 1982. Then I used one throughout the '80s along with the TB-303, TR-909 and 606, and let's not forget the TR-707. Needless to say, I was chomping at the bit to get my hands on this new Aira series and give you an in-depth report.

Snap Judgment

PROS Immaculate recreations of the TR-808 and TR-909 that also go far beyond the originals. Integrated delay and reverb can be sequenced. External audio input allows tempo-synced gating and side-chaining. Unit can act as an audio interface.

CONS Drum and effect parameters can't be saved with kits or patterns. Only 16 pattern memories.

Specs

Let's get the nuts and bolts out of the way first. The TR-8 is astonishingly modern in its amenities. We've all seen the videos of its LED-laden panel. In person, the thing glows like it's filled with kryptonite and it positively begs to be added to a live EDM/DJ rig, thanks to its full complement of USB connectivity including sync, MIDI, and two-way audio communication that lets you record direct and independent digital audio for every drum channel in the beast. What's more, the TR-8 can serve as an audio interface for your computer, so you can send the output and sync from your DJ software, then process that audio through the TR-8. As a performer, I was immediately fascinated by this option and tested it heavily for this review—more on that in a bit.

The essential sounds of the TR-8 are, again, modeled replicas of the original TR-808 and 909 kits. Individual drums and percussion elements can be mixed, matched, and sonically tweaked to create entirely new kits. The front panel controls include independent slots for kick, snare, three toms, rim shot, handclap, open and closed hi-hats, and two cymbals. At first, I was concerned that Roland had omitted other signature 808 percussion sounds, but these are just hidden more deeply in the unit's kit options. In fact, the layout is nearly identical to the kit selection in the TR-909, but you really have to be a purist to detect these discrepancies. Sadly, EDM's current crop of "preset teens" would never notice this detail. [*And those damned kids won't get off Francis' lawn! —Ed.*]

Above the drum kit controls are three sections for the reverb, delay, and external input, all with dedicated knobs per function. This brings me to one of my favorite aspects of the TR-8. With the possible exception of loading kits and swapping individual instruments, there's absolutely nothing fiddly about immediately producing great grooves with this box. Roland's devotion to the one-knob-per-function ideal really paid off here, because almost every feature is instantly accessible in live performance. (A notable exception is stereo panning, for which you enter Instrument Select mode, hold down a drum button, and turn the tempo knob.)

In the upper right-hand corner of the unit is the Aira family's new "Scatter" function, which performs a bit like iZotope's Stutter Edit or Ableton's Buffer Shuffler effect, reversing and re-arranging elements to morph grooves in extremely complex ways, with just a twist of a knob. Editor Stephen Fortner calls scatter "the BT knob," and that's an apt moniker.

The final few knobs and buttons are devoted to parameters like tempo, shuffle/swing, and switching between the various recording and performance options, and that's it. The TR-8 is blissfully straightforward in every way.

The Sound

Keyboard readers know that I'm obsessed with today's analog renaissance, so I'll admit that I was pretty skeptical about Roland's all-digital Analog Circuit Behavior (ACB) approach to modeling the TR-808 and 909. Roland claims this emulates complex interactions between analog components such as transistors and capacitors, and that they did a lot of reverse engineering of the vintage units' circuit boards. (There's a precedent for this in the form of the sophisticated SPICE circuit modeling software used by engineers, though I don't know whether that's the tool Roland used.) For reference, I still have a Boss DR-110 that includes 808-derived analog circuits, along with a Mattel Synsonics and Korg's new Volca series (reviewed Mar. '14). So in conjunction with my synths, I certainly had enough tools at my disposal to assess whether the new Airas truly sound "analog."

As mentioned, the TR-8's drums are laid out like the originals, but with more knobs for each drum, so you can fine-tune the sound of each to your exact specifications. Even the extra 808 percussion options, like congas, clave, maracas and the quirky-but-timeless cowbell, are perfectly captured. Whether Roland's ACB approach is strictly modeling or a hybrid that incorporates sampling is beside the point. The unit's 24-bit resolution (32 bits internally) and 96kHz sampling rate, combined with the added parameters and overall sound, result in audio that's present, punchy, warm, and absolutely in-your-face like proper analog.

There are 16 kits in total and interestingly, there's no "save" function. Once you select your sounds for a given kit, they're locked until you change them again. You can even set up the toms so that each can have its own sound. For example, the low tom can be a sharp 808, the mid tom a quirky 909, and the high tom could be the 808 conga with its higher pitch and rounder sound. This is especially cool in conjunction with their tuning functions. You can easily create simple melodic content in this manner, which is even more fun when you add the 808's clave and cowbell.

Now, let's answer the big question. Did Roland nail the analog beauty of the originals even as they kept the innards of the Aira system fully digital? The answer is a resounding "Hell, yeah!"

If you take advantage of the new knob functions, like tuning, decay, and compression (on the kick and snare), and do so with an ear for the originals, the results are functionally identical to the TR-8's analog ancestors. Little quirks like the way the snare and clap noise elements are layered, or the whiff of bit-crushing in the 909 hi-hats and cymbals, are absolutely nailed.

Here's a gripe, though. Even with all of these options for customizing individual drums' sounds, your edits can't be saved at the kit or pattern levels. The kits contain only the sound selections, not their parameter settings. Here's hoping there's a way to add this ability in a firmware update at some point.

Sequencing and Performance

Make no mistake, the TR-8 is a targeted at live performance and not designed for song composition. Other than selecting a range of patterns to play sequentially, there's no proper chaining of patterns into songs. After all, when it's connected via USB, you can easily create complex song patterns with your DAW's sequencing features, so this isn't a deal-breaker by a long shot. Onstage, of course, the point is to trigger patterns manually and tweak them on the fly.

Also, the TR-8 only offers 16 main pattern slots. In a nod to the original TR-808, each of the slots can have A and B versions, which can be toggled on the fly or strung together to create two-bar patterns, complex 32nd-note one-bar grooves, or things in between, depending on which of the four Scale options you choose. Between the Scale choices and the Last Step button (which lets you set any step as the final one in the pattern), odd time signatures are possible if you want 'em.

As with the kits, there's no "save" function for the patterns. When you move to another pattern, whatever you did on the previous one is retained until you return to it and revise it further. In context, this felt completely natural.

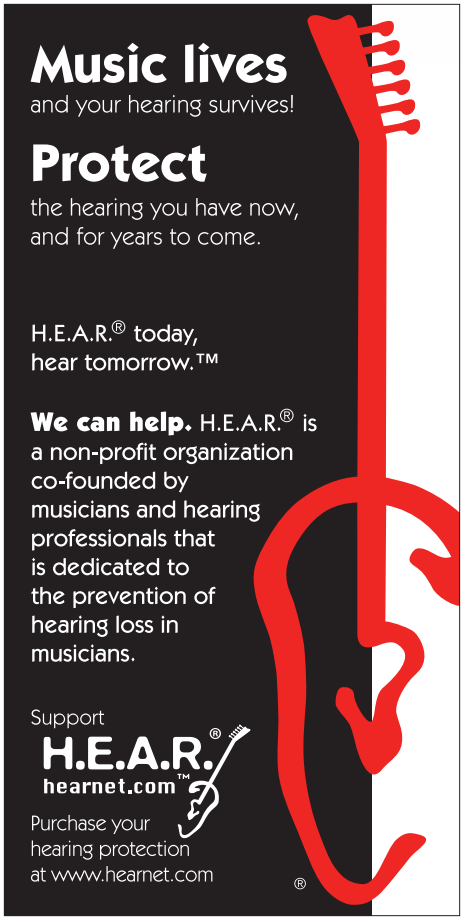
The back of the TR-8 sports connections for USB, five-pin MIDI in and out, a stereo mix out, 1/4" stereo headphone out, two assignable outputs for individual drums, and stereo 1/4" external inputs for processing audio. The TR-8 can also send each and every drum on its own channel as audio over USB.

Programming patterns is handled using the same two methods that nearly every drum machine uses: Triggering sounds by hitting the non-velocity-sensitive buttons (with quantization baked in) or via Roland's timeless step entry mode that *everyone* has copied over the past 30 years. I wasn't bothered by the lack of velocity or pressure sensitivity, because that's not part of the character of the originals. If you want to emphasize specific hits, you can always apply the Accent knob on those steps.

Essential functions like copying or erasing patterns are handled via intuitive key combinations that I mastered within an hour of opening the box. Once your sequence is programmed, you can add flourishes like rolls and variations by holding secondary keys while pressing the button for the drum(s) to be affected. There are eighth-note and sixteenth-note rolls, as well as two "vari" options that further syncopate the drums to which they're applied. Multiple roll buttons can be pressed in combination for further variety, which was a pleasant surprise.

Finally, there's a mute mode that can eliminate various drums for intros, breakdowns and other dramatic effects. A solo function would have been cool as well, but that's splitting hairs. Again, I have to emphasize that any omissions in the sequencer's features are largely academic in this context.

Roland clearly knows that the reason the TR-808 and 909 were successful wasn't because of their arcane song construction tools. These are the very drum machines that launched electronic dance music as we know it, and were central to



a good chunk of hip-hop (though the Akai MPC shares the spotlight there), and the Aira approach to sequencing and performance exemplifies this.

Further Features

In addition to the TR-8's collection of amazing drum sounds, there are integrated delay and reverb effects that you can add on a per-step basis. For example, you could set the reverb to hit only on beats 2 and 4 and the delay to hit on the off-beats—or cook up any pattern that you can imagine. There are eight distinct options for each effect and some go far beyond the usual halls, rooms, and tempo-synced delays. Many are extremely chunky and gritty, and there are even some LFO-modulated delays for wobbly effects. What's more, you can dig deep into the system and turn effects off for specific drums, which can tighten your mixes considerably.

The cherry on this sundae is the TR-8's stereo external input, which can accept either analog audio via the 1/4" jacks or digital audio over USB. As soon as I saw this, my DJ brain exploded in ecstasy. With a little forethought, you can actually use the TR-8 as the audio interface for your Traktor or Ableton rig and have the entire thing locked to tempo. As if that weren't enough, the external input includes gate and sidechain effects that can also be sequenced on the fly for pumping and chopping up your tracks as you layer the TR-8 grooves on top. I spent a few hours pushing this system to the limit, mixing tracks from Ableton through the TR-8's USB audio link, and didn't have a single hiccup. Note that the TR-8 is always running at 24-bit/96kHz resolution, and will force your software to do the same, so consider the CPU impact if you intend to pair it with an older laptop.

Conclusions

I'll admit that the buzz leading up to the Aira release was both mysterious and heavy-handed. It wasn't that I was skeptical about Roland's intentions—I just wanted to make sure that the TR-8 didn't have that flat "in the box" sound that digital products often suffer from. All I can say is that the TR-8 exceeded my expectations in nearly every possible way. It's truly addictive as a performance tool and drum machine, and its ability to integrate seamlessly into a DJ or live EDM rig (not to mention its rock-solid performance and sturdy build) gave me the confidence to include it in both of my performances at Austin's South by Southwest music festival in front of thousands of people. I'm not just a believer. I'm a full-fledged addict, and I'm not the only one. Ari Evans, CEO of highly influential EDM blog LessThan3, was at my home during the tests, and he concurred that the Aira TR-8 is "the future of live EDM performance." Final answer. ♫

Bottom Line

The TR-8 fully lives up to its hype, but goes way beyond that. It's quite possibly the new standard for live beat-making.

$499 street
rolandus.com

Hear It Now!

Original audio examples.

Walkthrough video.

keyboardmag.com/may2014

ROLAND
Aira TB-3

BY FRANCIS PRÈVE

ROLAND'S AIRA SERIES ALSO INCLUDES A 21ST-CENTURY REWORKING OF THE TB-303 Bass Line synth, which helped launch acid house music in the late '80s and was hugely influential in early hip-hop. Propellerhead ReBirth did an uncanny job of replicating the sound over a decade ago, so it's certain that Roland would improve on that. They also took a lot more liberties relative to the original than they did with the TR-8 (see page 50), and that's a wonderful thing. Let's face it: Programming the TB-303 was *complicated*, and a joke among users was that you actually had to be on acid to get it. In contrast, the TB-3 features an LED-backlit touchpad and decidedly enjoyable approach to making hypnotic loops.

Overview and Sounds

The TB-3 eschews slavish devotion to the original's features, starting with its whopping 134 preset tones for use as "oscillators" in the context of its synth engine. Twenty-six of these tones are replicas of the TB-303's oscillator, and they each cover a different approach to its sound.

Bank A's collection of 26 modes is entirely devoted to the original 303's sound, including some cool processed options. The first four modes

Snap Judgment

PROS Knockout modeling of the TB-303 sound. Covers classic as well as contemporary sounds. Integrated effects complement the oscillator modes beautifully. Sequencing is fun and immediate. Doubles as a USB audio interface.

CONS Changes to synth parameter values can't be saved. Sequences can't be exported via sys-ex.

TB-3 OR VOLCA?

We've been asked—a lot—whether the TB-3 is better than the Korg Volca Keys or Volca Bass. The answer is deeper than, "Well, they're different," because they have quite a bit in common, such as touchpad keyboards, extremely similar workflows, and no ability to save edits to sounds. The TB-3 has eight times as many sequence patterns—but the Volca Keys can automate parameter changes. In the TB-3's favor, it can double as a USB audio interface. On the Volca side is the cachet of being real analog. The Volca synths also have more knobs, a speaker, and battery operation. They have no swing or shuffle, though, which limits groove options. Each has a distinct character, and after a lot of listening, I still couldn't say which sounded "better"—honest.

in the bank are outstanding recreations of the original unit's basic sound with its distinctive sawtooth and square waves beautifully replicated. After that, things get pretty wild.

Despite the original 303 only offering those two waves, there were quite a few common processing tricks that were applied during its heyday in the late '80s and early '90s. Notable production tricks included different types of distortion and overdrive, as well as delay, reverb, and chorus/unison effects. All of those are represented in the rest of bank A and sound fantastic. The other three banks cover bass, lead, and effect sounds, respectively. Many of these cater to current dance fashions and may sound dated in the future, but others are inspirational and timeless.

After you've selected a tone as your starting point, you've got a few knobs for dialing in your sound: Volume, Cutoff, Resonance, Accent, and Effect. At first glance, it's easy to assume that the 303's legendary envelope modulation and decay are absent. Not so—they're simply accessed via the unit's touchpad as you play and program, courtesy of four interface modes for the screen.

Get beyond bank A, and the envelope modulation affects more than just filter and decay. Bitcrushing, elaborate modulation, and even some granular-style effects can be performed here. The same applies to the TB-3's Effect knob, which adds time-based effects like delay and reverb. The TB-3 also includes the Aira series' "Scatter" function, which warps and twists the patterns in a musically intelligent and glitchy manner.

Another performance option is the X-Y play mode, which gives the TB-3 a distinctly Kaossilator vibe. When this is active, the touchscreen lets you inject pitch swoops into your performance, even as a sequence plays. When you switch to X-Y mode, finger contact temporarily interrupts the active sequence. The piano keyboard mode works in a similar fashion, with the onscreen keys interrupting the sequence as long as your finger remains down.

Like the TR-8, the TB-3 can serve as an audio interface, thanks to USB implementation that includes both MIDI and bi-directional audio.

Sequencing

The TB-3 includes 64 pattern slots for your sequences. Each is one measure long, but Roland's Pattern Select mode lets you chain up to eight patterns (a single bank, to be clear) in sequence with a swipe of the finger. This gives the unit a lot more musicality in a performance context, but like the TR-8, there's no chaining of patterns into songs per se. As with the TR-8, this isn't necessarily a bad thing. It's just a reminder that these grooveboxes specialize in live performance.

You enter sequences via either step recording or realtime note entry. In step mode, the TB-3 recaptures the original 303's approach in all its wacky glory, but thanks to the touchpad, the process feels friendlier overall. The original's rest, accent, and slide/tie functions are handled by the touch screen's green panels, which flank the red keyboard.

Realtime mode works as you'd expect, with the bonus of the step LEDs scrolling across the top of the unit as you enter notes. I have to say that a simple metronome would have come in handy here, but there's none.

I was initially peeved that the TB-3 didn't store any synth parameter edits with its sequences. In light of everything the unit is capable of, this would put it over the top, especially considering the sonic range of its synthesis engine. Then I considered the original 303, which didn't do this either. Neither do the Korg Volcas. So, as with the TR-8, the intention here is to engage your imagination as you work. That can lead to a lot of happy accidents, so if you're noodling away on the TB-3 in the studio, have your DAW rolling to catch them.

Conclusions

Overall, the TB-3 is an astonishing accomplishment. If you stick with a few select TB-303 models in the first bank of preset tones, it's a beautiful emulation of the original that sounds absolutely massive through speakers. Then, when you add in another 100 or so tones that cover a lot of both analog and digital synthesis territory, you're out of 303-land and into a whole new arena of sound. While some of the sounds have a bit of digital sheen, there are a lot of Virus users who crave that sound, so their needs will be satisfied by the TB-3 as well.

The other performance modes, like X-Y play, envelope mod, and the touch-keyboard all take the performance angle even higher. I fully expect to see this wonderbox in as many DJ rigs as the TR-8—most likely in combination, which is another sign that the club landscape is about to outgrow its roots of simply mixing tracks together. All in all, the price-to-performance ratio on the TB-3 makes it a modern classic. ♫

Bottom Line

Roland captures the essence of the TB-303 and makes it more fun, more flexible, and easier to use.

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Fig. 1. BreakTweaker's main page shows the six tracks and the patterns each is playing. Below, the MicroEdit pane opens when you click on any sequencer event, letting you rearrange its audio at what feels like a quantum level.

IZOTOPE
BreakTweaker

BY JOHN "SKIPPY" LEHMKUHL

FOR THE LIFE OF ME, I COULDN'T FIGURE OUT HOW HE DID IT. I'D LISTEN OVER and over, trying to program those incredible sonic edits that electronic music legend BT is known for. His plug-in Stutter Edit (reviewed Aug. '11) finally let us do some of these tricks, but BT has hinted for years at a follow-up plug-in for rhythm creation. Enter BreakTweaker. Fundamentally it's a "groovebox" plug-in, but that's kind of like calling a Porsche Panamera plug-in hybrid a "gas-saver." Everything isn't all roses, but what BreakTweaker does well, nothing else can do at all.

Tracks

Six percussion tracks are available for groove creation, each with its own solo and mute button (see Figure 1). Next is a Waveform Edit button for each track, which opens the Generator window. A Generator preset is the closest thing here to a "patch"—more on this in a bit. A Play button triangle triggers each track's sound, and if you click on the folder icon, it opens the Generator presets menu, so you can call up a different sound. Next is the playback multiplier, which alters the track's playback speed from 1/3X to 3X.

Up next are the track volume and pan knob and the 32-step step sequencer grid. Timing events on the grid are light blue: click to create and double-click to remove. You can change their

Snap Judgment

PROS Unprecedented tools for integrating complex time-based micro-edits into electronic grooves and beats. Powerful step sequence-based drum machine. Powerful sample-based and DSP synthesis engines. Interface mostly makes dealing with all this complexity very easy. Huge 2GB sample library, with much content created by electronic composer BT.

CONS No Swing parameter. Only 75% of the pattern window's width is visible at any given time. DSP synth engine produces aliasing. Skimpy number of pattern and Generator presets. Can be CPU-intensive.

Fig. 2. In the Generator Edit view, you can create and edit sounds based on samples or an internal synth engine. With the current track across the top and MicroEdit across the bottom, you see everything pertinent to the sound of one track.

length by dragging the right edge, and their volume by dragging up or down. Under the 32 steps is a solid bar; changing its length makes that track longer or shorter. All this is *per track*, which allows complex groove possibilities before you even get into the MicroEdit window, which operates *per event*, and is by far the coolest feature in BreakTweaker.

One odd design choice is that the main interface doesn't show you all of the overall drum pattern. There's a window box at the top that's visually reminiscent of Pro Tools' "universe view," and you have to drag it left or right to see the first two or final two beats of a two-bar pattern. Either you get used to jockeying back and forth or you make your patterns one bar long—which, interestingly, is the default length for new patterns.

Micro Editing

BreakTweaker's sequencer is unique because each event can be a different length, and the way any event behaves depends on the MicroEdit window. You could divide a single timing event so that it triggers itself more than a thousand times. With the innovative Type, Slope, and Gate parameters, you can create mind-blowing stutter, glitch, and timing effects. The Type can be set to divide the timing events by an absolute number of divisions, a set timing value, a starting pitch, or an absolute speed in Hz. The Slope parameters decide how evenly these divisions are distributed over time: "Tension" controls whether they play in an accelerating or decelerating manner (from subtle to extreme) and "Rotate" alters the playback "phase"

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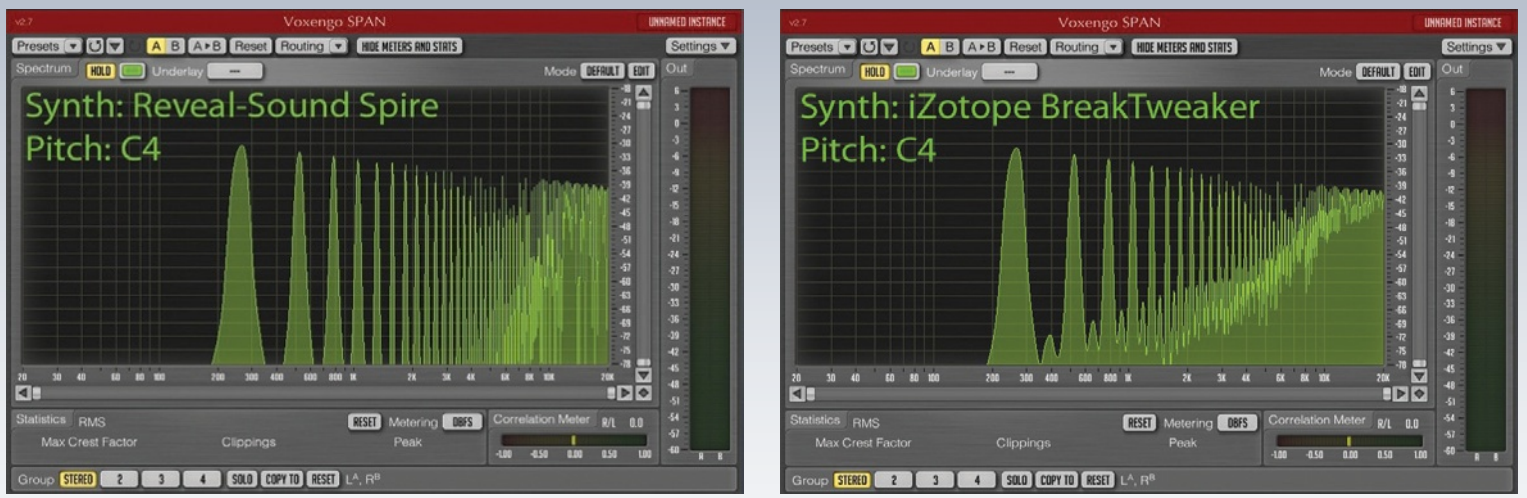


Fig 3. Side-by-side comparison of playing middle C with the default sawtooth waveform from Spire (left) and BreakTweaker (right). Because of the aliasing it produces, the synthesis capabilities of BreakTweaker are not as sonically impressive as they could be.

of the micro-edited events. Gate sets the gap between events. You get 34 Slope presets, which affect how all these settings interact.

You can transpose the pitch per event, add a distortion or filter effect per event, and the fade-in/out volume parameter is very useful. At far right of the Sequencer window is an output assignment setting for each track; this is helpful because there are no mastering, delay, or reverb effects built in.

Though there's no swing or shuffle parameter (a glaring omission to some, but perhaps not to makers of four-on-the-floor dance music), I found a way to make parts *kind* of swing: Drag an event width to a quarter-note, with a division of 2, and use the "Kinda Slope" preset.

SOUND LIBRARY

BreakTweaker's library is divided into Pattern and Generator presets. A Pattern preset contains up to six tracks and typically 12 patterns (out of a possible 24) in a number of electronica genres. The Generator presets come in drum, synth, and bass flavors. Although there are many acoustic drum and some percussion samples, the factory patterns and sounds are focused strictly on modern dance styles. Having only 69 Generator presets seems skimpy given that there are over 4,000 samples. To get the most out of BreakTweaker, you have to dig deeper into the Generator editor. Three additional libraries come in the expanded version. Cinematic Textures is a must for composers, with more than 700 sound design-focused samples and 71 incredible patterns. Vintage Machines is very useful but is really more pop/dance than vintage. The Kick and Snare expansion, however, doesn't have a single Pattern or Generator preset to support its 102 samples.

Sound Engine

A BreakTweaker sound is called a Generator (see Figure 2). Each of the six tracks is assigned one Generator, which in turn can consist of up to three Generator Lanes—think of Lanes as layers. Each Lane can use either a sample-based sound or a two-oscillator synth, so you can mix and match. Clicking the waveform display opens the Generator editor, which is laid out in three sections: Oscillator; Distortion, Filter, and Mix; and Modulation, which contains four envelopes and four LFOs. For sample-based Lanes, you can optionally drag-and-drop samples from your computer.

As to factory sound choices, each drum type is divided into sub-folders. For example, the Kick folder has sub-folders named Acoustic, Basics, Dubstep, Electro, Hip Hop, Minimal, Trance, and Vintage. You might want to try the Discovery button, which uses a cloud-based audio search engine. (Internet connection required, and it only works with the factory samples.) Looping with realtime crossfades is available for fleshing out samples that need to play longer than their original length.

The other option is the DSP synth, which shows you a waveform display with two tabs at the top to select between oscillators 1 and 2. Here, a folder icon lets you peruse 99 different wavetable presets, ranging from basic waveforms for subtractive synthesis to complex multi-wave tables. The Distortion section can produce two distinct distortion presets at the same time. Distortion flavors include Warm, Transistor, Hard, Digital, RAW, and Aliasing. There's a mix parameter, but be aware that some of the distortion presets alter the sound even when mix is set at zero.

Next up is a single Filter that has three sonic characters: New York, Tokyo, and Brick Wall. All include lowpass and highpass options; New York adds a bandpass mode. A mix stage lets you change panning and volume for the current Lane. The ADSR envelopes feature adjustable curvatures for the attack, decay, and release segments.

The LFO offers more than 80 waveforms. LFOs can sync to host, and retrigger (or not), and you can shift the phase. When you combine these LFOs with the complex wavetables and synthesis abilities, some pretty dynamic sounds can be produced on a single track. Virtually every knob or slider can have two modulation sources, but be aware that the envelopes and LFOs are the only sources available.

BreakTweaker's synth engine produces noticeable aliasing. It's not just on very high notes; playing a simple sawtooth wave *C4*, I could both hear it and see it on a spectrum analyzer relative to another soft synth, Reveal Sound Spire (see Figure 3). Since BreakTweaker is designed for making in-your-face beats and grooves with an EDM focus, maybe this is less of an issue than it would be for most synths. Still, reducing the aliasing would make the synth engine's powers more clearly heard, and iZotope is looking to improve matters in an update.

In Use

Despite its under-the-hood complexity, BreakTweaker is almost primitively simple to use. On a MIDI keyboard, you play chromatically from *C1*

to play the six sounds assigned to each track. Play chromatically from *C2* to trigger the 24 separate patterns. There are two play modes: Gate and Latch. Gate starts with a note-on and stops with a note-off. Latch starts when you hit a key (or drum pad) and doesn't stop until you hit it again, freeing your fingers to change patterns. With the "Always Retrigger" toggle turned turned off, you can trigger new patterns and they won't restart the whole thing from beat 1, which is very useful for sequencing realistic and dynamic rhythms. Though there are no realtime MIDI parameters to map physical controls to anything inside the engine, every parameter (for all six tracks) is registered in the automation list of your DAW.

To make your own patterns, it's fun to click in the grid and get a cool groove going. Select "Load Kit Only" from the main preset directory to load samples and get started even faster. You also can select one of the 24 pattern boxes in an existing pattern to further develop one of the factory patterns. However, there are a few things that I hope iZotope will change in a future update. As of version 1.0, all patterns have to share the same Time Multiply and Track Length settings. These are terribly limiting. For example, if you make a half-note hi-hat groove for pattern 1, the hi-hat track will be a half-note in length for the other 23 patterns. You can't have a multi-time-signature polyrhythmic breakdown in the middle of your song, because if you try, all 24 patterns will be multi-meter polyrhythmic. Also, volume and pan are not stored on a per-pattern or per-micro-edit level. It would be nice to change these settings throughout a song.

As to CPU use, my 2010 six-core 3.5Ghz Mac Pro kept chugging along without any issues. However, my 2006 quad-core 3.0Hz Mac Pro had problems playing even three tracks without audio dropouts. I highly suggest downloading the demo version to see how it works with your computer.

Conclusions

If you want to experiment with complex rhythms and incredible stutter edits, BreakTweaker is a no-brainer. The sonic quality of the extensive sample library is also a big plus. These world-class sounds and the unprecedented timing engine earn a major thumbs-up. However, the lack of swing, the truncated view of the pattern window, and the relatively small number of Generator presets make BreakTweaker seem underdeveloped for a premium-priced software instrument. That said, the importance and coolness of what it does can't be understated: It makes glitch, stutter, and complex micro-timing tricks a part of your initial beat-making process, whereas until now these had been effects or edits you had to apply after the fact. *Nothing* else does this. ♫

Bottom Line

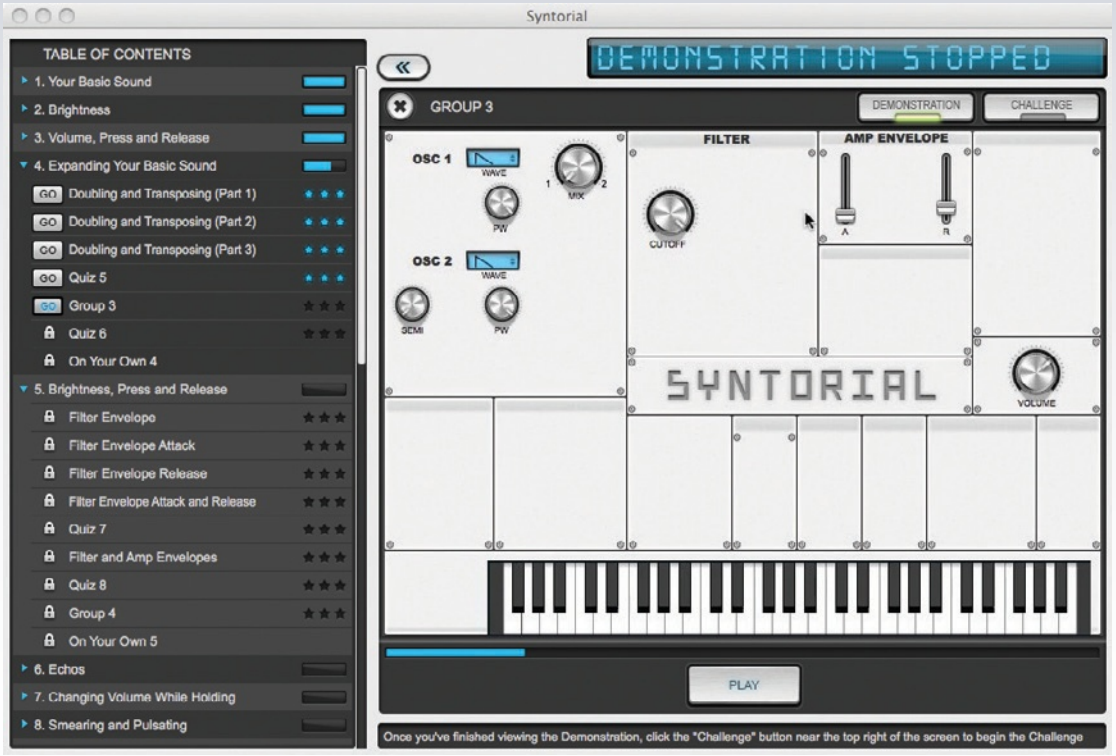
A groundbreaking integration of groove machine and glitch/stutter generator that no EDM artist or music-for-picture composer will want to go without—but with a few "version 1" speed bumps.

Standard: $249 street
Expanded: $299 street
izotope.com

See It Now!

The author's comprehensive video review of BreakTweaker.

keyboardmag.com/may2014



In the demonstration, the controls you see are actually a video playback explaining the particular synth function. You then proceed to the challenge, in which these functions are put into action.

AUDIBLE GENIUS

Syntorial

BY TOM BRISLIN

HOW DO YOU LEARN TO PROGRAM A SYNTHESIZER? THE OWNER'S MANUAL IS a good place to start, but it's not always clear what a particular adjustment is really doing to the sound, and how it affects the overall makeup of a synth program (especially to a newcomer). Enter Syntorial, a synth training application that helps you understand and *hear* synthesis, from the ground up.

When first starting Syntorial, and whenever you encounter a new section of the software, you are greeted by one of many help videos. These are your virtual professor, outlining how to use the software as well as giving subjective descriptions of the various sonic qualities you'll be identifying and tweaking. There's no need for a manual or any other documentation outside of the software itself.

Each lesson contains a demonstration and a challenge. The demonstration is a video that shows you the concept or synth function for each lesson. You can pause or replay it before going to the challenge.

The demonstration video displays the syntorial synth panel, which at first deals with the most basic building block of a sound: the waveform. You get to hear the differences between waveforms, and then during the challenges, one of the settings is played. Your task: Match it correctly by choosing the right setting. The narrator gives any important definitions as the demonstrations progress; even a user with zero synth experience could learn how it works.

The challenges play a simple note sequence on a "hidden" patch—a synth program whose settings are not shown. You can then make adjustments to whatever parameters are available, and can go back and forth between your patch and the hidden patch while the sequence continues playing. Once you feel you've matched the sound of the two, click "Submit" for your results. You'll get instant feedback, outlining incorrect settings in red, which will turn green once corrected. (Don't be intimidated by all of the possible values that a knob or slider can have; the settings are notched to just a few available values per control.) The help video states that it's very important to play the sound while making adjustments so you can get to know the differences. This is a vital aspect of learning the synth programming process.

Once you've completed the series of lessons, there's a short quiz. Each multiple-choice question asks you to identify something about a sound that

Snap Judgment

PROS Clear, concise, ear-based lessons emphasize recognition of audio examples. Copius amounts of helpful videos along the way. Progressive material in lessons from bone-simple to more involved settings. Synth, called Primer, can also be used as a standalone or plug-in instrument. Quizzes offer audio examples to correct you if you get something wrong.

CONS Primer synth is limited to six voices of polyphony.

The challenge begins with a "hidden" patch. Play it manually or let run a short looping note sequence run. Listen for as long as you like.

Switch to "My Patch" and the available controls will appear. Make the necessary adjustments to make "My Patch" sound just like the hidden patch. Toggle between the two as often as necessary.

Submit your results and Syntorial will tell you how you did. Correct settings are highlighted in green, incorrect settings in red.

The companion synth, called Primer, is available in VST and AU formats. It features the full array of Syntorial's synth parameters, preset banks and user patches.

corresponds to the content in the lesson. If you answer incorrectly, it reveals the correct answer, and a play button appears next to each choice. You can now listen to the differences in the answers. Some questions refer to concepts explained in the help videos, so pay attention! Once you complete the quiz, regardless on how well you did, the next lesson is unlocked. Fun.

Before moving on to the next lesson, syntorial gives you an "on your own" assignment. In this, you go to your own hardware or software synth and try some tweaks the program gives you. This applies to most subtractive synths, but if you're working with an old DX7, most of the material may not apply.

Since you'll be getting very handy at editing Syntorial's internal synth, it makes sense to have it as a standalone or plug-in instrument. In this context, the synth is called Primer. It has healthy specs: monophonic or six-voice, two oscillators plus a sub-oscilaator, low/high/bandpass filter with resonance, LFO, distortion, phaser, chorus, delay, and reverb, plus envelopes and a few modulation routings. This is an excellent inclusion.

There's a lot to like about Syntorial. It gets you listening to differences in sound right away, without bogging you down with too much jargon or information at once. Little by little, the synth's front panel becomes more populated with parameters, and eventually becomes a nicely functioning virtual analog software synth. One likeable aspect is that it doesn't just show you how a synth works, it deals with how to *approach* sound design when matching timbres. The videos and "on your own" assignments are full of effective strategies on approaching the tones you seek. If you really want to learn about subtractive synthesis and how to recreate the synth sounds you hear in music, Syntorial is a must-have. ♫

Bottom Line

The most comprehensive and fun tool for learning synthesizer programming, hands down.

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syntorial.com

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KORG Gadget

BY FRANCIS PREVE

AT NAMM, KORG ANNOUNCED AN ALL-IN-ONE MULTITRACK MUSIC-MAKING APP called Gadget. I'll be candid here: I've been very skeptical about iOS as a full-on recording environment. Sketchpad? Absolutely. Creating audio and loops for importing into my primary DAW? I've done it countless times. Actually completing a polished track on an iPad? Reply hazy at best. Of course, *all* of Korg's previous iOS synths have been world-class examples of what's possible in iOS. So, with everyone at NAMM buzzing about it, I swung by the Korg booth for a demo and was duly impressed. When I got home, I downloaded my own copy and got to work.

Synthesizers

Gadget's synthesis engine is a monster, including modeled analog, FM, phase modulation, vector synthesis, wavetable synthesis, and a few sample-based synths for things like drums, special effects, and acoustic instruments. But instead of putting all that power into a complex and confusing interface, they distilled it into 15 distinct soft synths that run inside the Gadget environment. Each of these is optimized for a different aspect of electronic music composition and named after a different city.

For starters, there are two drum synths—Lon-

Snap Judgment

PROS Fifteen specialized instruments that run the gamut of synthesis techniques. Powerful sequencing tools are actually easy to use. Very intuitive use of touchscreen. Great sounding mixer and effects deliver professional results. Export, WIST, and social media integration.

CONS No user sampling or external audio recording.

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don and Tokyo—that cover the bases for sampled and analog modeled sounds, respectively. London includes a huge assortment of drums and some really sweet editing features, like per-drum control over tuning, duration, reverse, punch, low boost, and the ability to apply an onboard effect that can be anything from gated reverb to granular delay. Tokyo is a simple virtual analog affair that offers customizable kick, snare/clap, toms, and percussion.

Speaking of analog, the next four city-themed synths—Chicago, Berlin, Phoenix, and Dublin—all sound fantastic and cover a specialized range of the analog world. Chicago is Gadget's TB-303 emulation and does a great job of evoking the original, especially in the filter and distortion departments. Berlin is a monophonic synth that specializes in hard sync effects. Phoenix is Gadget's polyphonic offering (see image), and it both looks and sounds reminiscent of the legendary Oberheim OB-Xa, sporting dual oscillators and a sweet-sounding lowpass filter. Dublin is another monosynth and handles more like a Moog, with a few faux-modular interface elements thrown in to keep things interesting.

On the mainstream digital side, Marseille, Wolfsburg, and Brussels deliver the essentials. Marseille is a ROMpler covering necessities like piano, strings, brass, and such, but with the addition of a nifty Chord button that works in conjunction with the global key signature and mode settings to make clever one-finger progressions absurdly easy. Wolfsburg has that icy digital-analog sound that strongly evokes the vibe of a Nord or Virus, whereas Brussels is the monophonic go-to synth for super-saw festival leads.

In the realm of more exotic digital tools are Kiev, Helsinki, Miami, Chiangmai, and Kingston. Kiev is a nifty little vector synth with lovely modulation amenities and a fantastic wavetable. Helsinki excels at ethereal textures with an additive flair. Miami does dubstep wobbles with grit and swagger. Chiangmai is Gadget's DX clone, and Kingston's specialty is arcade sounds and chip tune leads.

Rounding out the collection is a "boom box" called Amsterdam that has four slots for sampled sound effects such as explosions and risers.

In addition to spot-on sounds and interfaces, most of these synths include integrated effects that are tailor-made for their character and go a long way toward eliminating the need for added processing and EQ in Gadget's mixer, so the output of each synth is extremely polished. The attention to detail is stunning.

Sequencer

In four years of reviewing iPad DAWs and groovebox apps, I can honestly say the Gadget sequencer is is the best by far. It's obvious that Korg's engineers spent a lot of time analyzing top-notch computer DAWs, cherry-picking their most intuitive features, and then optimizing those functions for a touch screen interface.

Individual sequences are laid out in a manner that strongly evokes Ableton's session view without being an outright rip-off. They even use the term "Scenes" for the pattern groups. What's more, Gadget's ability to view the piano roll and current synth simultaneously has a whiff of Propellerhead Reason about it. In practice, Gadget's workflow is blissfully straightforward: Create a scene and then add individual synth tracks, each with its own associated sequence. Individual synth sequences can be any length, with the longest determining the overall duration of that scene. For example, a scene containing a one-bar drum loop, four-bar chord progression, and eight-bar lead will loop every eight bars. Delete the lead track and it becomes a four-bar sequence.

Arranging is even easier. Just drag your scenes around vertically until they're in the right order, top to bottom, and hit Play. As each sequence completes, Gadget jumps to the next until it reaches the bottom scene, then loops endlessly.

Editing tools are kept to the bare essentials, but as with everything else in Gadget, they're implemented so seamlessly that you don't really miss the fussier functions, which, honestly, would just clutter everything up on an iPad.

Mixing and Effects

Gadget's mixer includes panning and volume for every track, mute and solo buttons, a global reverb with individual send levels, and an adjustable limiter on the master bus. The reverb is a hall (with adjustable decay) and can't be changed, but since almost every synth has its own integrated effects, you really don't need much else besides this reverb. The limiter is also top-notch, with adjustable "intensity." In fact, as I was working on my first sequence, I cranked up the knob and was instantly greeted with that punchy-bricky sound that's essential for big-room tracks. Dialing it back imparted a more natural feel, yet still delivered the necessary impact for credible dance floor music.

Connectivity

Gadget comes with in-app social media sharing, WAV export to AudioCopy-compliant apps, and Korg's WIST technology for wireless syncing. Audiobus support was added as of version 1.02, but a recent iPad—such as an Air or Retina-equipped Mini—is recommended. All this connectivity can come in handy, as about the only thing Gadget can't do is record user samples or external audio—you'll need to get outside of Gadget to put a lead vocal over your electronic opus, for example. Frankly, when you have 20 to 30 synth tracks cranking away on your iPad—as I did on my recently purchased iPad Air, and without a glitch—you won't miss this ability. There's even a freeze function that will up your track count by another 20 to 30 percent if you're on an older unit.

Conclusions

From the moment I fired it up, Gadget completely blew me away. It's the single best iPad electronic music tool I've ever used, hands down. Its 15 synths are so specialized, but collectively cover so much ground, that even newcomers can quickly find exactly the sounds they're seeking. They're also so well designed that it's basically impossible to come up with a bad patch. The sequencing and arrangement functions are absolute best of breed for iOS. Even the limiter delivers Beatport-grade mastering for your exported songs. Finally, you can complete a no-compromise electronic track using nothing but an iPad. Buy. Gadget. Now. ♫

Bottom Line

The best iPad electronic music production tool on the planet—period.

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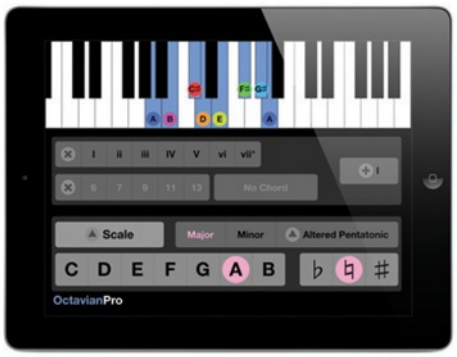

Octavian Pro
Bitnotic

Available on the iTunes App Store

Definitive music theory resource for students, teachers, songwriters, and musicians. Features 500+ scales, 50+ chords, progression sequencer, dictionary, and more. Keyboard Magazine said of Octavian 1.1.0 (Jan 2010): "It's a cheat sheet no keyboardist should leave home without." Compatible with iPad, iPhone, and iPod touch.

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Matt Johnson at a Jamiroquai TV appearance, playing (left to right) an Alesis Andromeda A6 atop a Rhodes electric piano, and a Nord Wave synth atop a Yamaha Motif ES8.

5 THINGS I'VE LEARNED ABOUT Playing Keyboards in a Major Act

BY MATT JOHNSON

U.K.-based musician and producer **Matt Johnson** has played keyboards for Jamiroquai for the last 12 years. He has also written and performed with Duffy, Newton Faulkner, and Will Young. Johnson is currently writing songs for a new Jamiroquai record with lead vocalist Jay Kay, as well as writing and producing for a new artist named Laura Doggett. Find out more at jamiroquai.com/jamiroquai/biography/matt-johnson.

YEARS OF PLAYING STEADILY BETTER GIGS WITH BETTER PLAYERS HAVE taught me how to really impress in a band situation. I started playing at the age of 17 in Howie Casey's band, a sax player who played for Paul McCartney, Marc Bolan, the Who, and many more. He taught me how to play with authority. For the last 12 years, I've been a member of Jamiroquai, playing with a world-class band that has helped me hone my skills to no end. If I hadn't fit in perfectly in that situation, I would've been long gone! Here are five things I've learned about playing in a band at this level—which can help in any band at any level.

1. Be Generous

Being a *generous* musician is key to fitting in with any band. Remember, music is not a competition. There's nothing worse than a group that sounds like a loose confederation of warring tribes. Don't be tempted to play your super hot licks all the time—you'll just get on everyone's nerves! Try to see yourself as a cog in a well-oiled machine and refine your parts to fit in perfectly and complement others.

2. Play Less

Imagine yourself in a studio playing on a great record. How much would you want the keyboard player to be doing? Probably a lot less than many players end up playing at a live show! A great rock or pop band knows this and arranges their songs to complement the vocals. When you play less, the odd occasion when you play a little something extra becomes really special—as long as you pick the right moment. Another tip is that when you're given a solo, try not playing straight away. A couple of bars of silence will impart a little tension to the mix. People are really listening now, wondering why you aren't playing! Now you have a chance to create something special. Make your first few phrases really minimal, and the rest of the band will get into a vibe.

3. Watch the Singer Like a Hawk

You should always be sensitive to how the singer is feeling. If you can see he or she is struggling, don't bash away selfishly. Instead, try to think of the best thing you can play to help him or her through it. Keyboards are usually the most important instrument for a singer, as they provide the pitch. So always be aware. Sometimes you can really inspire a singer by playing something unexpected, but you need to use your ESP to get it right.

4. Timing Is Everything

Focus more on your timing than what notes you're playing. It's better to play simple and grooving than interesting and sloppy. If your timing is super tight, you will encourage others to play the same way.

5. No Presets Allowed

Making your own sounds makes what you do unique. I hear a lot of players who just use a Rhodes preset all night, and while they play nicely, it's boring. Keyboardists are lucky to play instruments that are capable of a *wide* range of sounds. Learn programming and be as "compositional" with your sounds as you are with your notes. Sometimes an ambient or dissonant sound can be so much more exciting than just a piano or Clav part. *Any* modern synth can make great sounds if you invest the time to truly understand its architecture. Make your sounds easily tweakable as well. For example, if you can add a big reverb or filter sweep by turning the mod wheel, it can really make a simple sound come alive.

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